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UNIVERSITY OF ALBERTA

AN ORGANIZATIONAL ANALYSIS OF WORK HAZARDS IN COMMUNITY HEALTH

BY

D. LYNN SKILLEN ©

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

DEPARTMENT OF SOCIOLOGY

Edmonton, Alberta

FALL 1992

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled AN ORGANIZATIONAL ANALYSIS OF WORK HAZARDS IN COMMUNITY HEALTH submitted by D. LYNN SKILLEN in partial fulfillment of the requirements for the degree of DOCTOR OF PHILOSOPHY.

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DEDICATION

To all community health nurses

ABSTRACT

Healthy work environments are a mechanism for promoting individual and collective health. As employees, managers of personnel, and providers of health services, health professionals have an important role to fulfill. By examining their own work hazards, community health nurses (CHNs) assist public health units to become role models of healthy work environments and enhance their own sensitivity as professionals to the work environments of the public they serve. A sociological perspective, informed by organization theory, guided this exploratory study which was conducted in 1991 with 57 staff and managerial CHNs in five health units in Alberta, Canada. Self-administered questionnaires, semi-structured interviews, and moderated focus groups were used in a two-stage data collection procedure both to describe CHNs' perceived work hazards and strategies for improving the work environment, and to conceptualize the organizational factors underlying their work hazards. The descriptive component of the study used the categories of work hazards available in the occupational health literature: biological, chemical, ergonomic, physical, psychosocial, reproductive, and safety. Frequency distributions and descriptive statistics were obtained using the SPSSx software program. The exploratory thrust of the study necessitated reconceptualization of the problem of work hazards and its contextualization within organization theory. Data collection and analysis proceeded simultaneously using the constant comparative method of grounded theory (Glaser & Strauss, 1967). Results indicate that CHNs are a vulnerable worker population with exposures to psychosocial, safety, physical, ergonomic, and biological hazards. Results also indicate that organizational factors are inseparable from the perceived work hazards. The elements of a theory of organizational hazard surveillance emerge from the data: conditions for collegiality; control over physical plant; structures for surveillance; and hazard information transfer. The theme of power and dependency runs throughout the elements. Multiple triangulation strengthens the results. Directions for future research include: survey research with a representative sample; application of the theory to other health care organizations; and identification of the ideological factors that influence organizational hazard surveillance.

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I am indebted to the participants in this study for their time and their views. Without the thoughtful reflection of community health nurses and the cooperation of public health units who cared about organizational performance, this research would not have been possible.

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CHAPTER 1: INTRODUCTION

Work is a central feature of our lives. However, work environments contain biological, chemical, ergonomic, physical, and psychosocial hazards (Emmett & Baetz, 1987; Felton, 1980; Guidotti et al., 1983; Lowe, 1989; Izmerov & Kundiev, 1986; Lowe & Northcott, 1988; McDaniel, 1987; Nelkin & Brown, 1984; Olishifski & Plog, 1988; Randolph, 1984; Reasons, Ross, & Paterson, 1981; Rogers & Haynes, 1991; H.G. Rosenberg, 1984; Skillen, 1988; Sutherland, Clegg, & DeCourcey, 1986; Yassi & Guidotti, 1990). Since the social structures that underlie hazards in the workplace are neglected by the dominant lifestyle and environmental paradigms in the occupational health field, a sociological perspective contributes a better understanding of the persistence of work hazards. This is a study about the organizational factors that are related to work hazards among the health professionals who are expected to provide leadership for healthy work environments.

The existence of work hazards can only be partially understood using the two dominant paradigms that guide current occupational health research. Although the lifestyle perspective focuses on individual responsibility for protecting and promoting health through individual behaviours (e.g., stress management, not smoking), it neglects the organizational context of those behaviours. Research, however, suggests that social relations and structural working conditions, more than personal characteristics, determine employee reactions to the conditions under which they work (Dwyer, 1991; House, 1980; Kanter, 1977; Lowe & Northcott, 1988; Oldham & Hackman, 1981). While the environmental perspective emphasizes acceptable exposure limits for biological, chemical, ergonomic, and physical hazards at the worksite, it ignores psychosocial hazards and the organizational context. A third perspective, the epidemiological approach, provides surveillance of hazard outcomes (disease and injury by industry), but not surveillance of the organizational factors underlying the exposure to hazards.

No approach considers how power differentials determine hazardous exposures, how worker consent to exposure is negotiated, or how the labour force is segmented by gender, class, or race. Ignoring institutional factors (e.g., weakened regulatory processes, public policy), these perspectives only partially respond to changes in society at large (e.g., protection against HIV in the workplace, but not collective action for improved psychosocial environments). Indeed, these conventional perspectives are inadequate for confronting organizationally generated hazards and stressors. By promoting a biomedical rather than a public health model, the lifestyle approach converts the social problems of work into private problems of individuals (Castillo-Salgado, 1987; Feagin, 1986; McKee, 1988; McLeroy, Gottlieb, & Burdine, 1987; Sass, 1986; Taylor, 1982; Waitzkin, 1981; Wikler, 1987; Winett, King, & Altman, 1989). By reducing stressors to concrete and measurable hazards, the environmental approach ignores deterministic social relations (Navarro, 1982) and psychosocial work environments. In collecting statistics on the distribution of work-related disease, injury, and death, the epidemiological approach must depend upon the quality of the statistics that are compiled and concentrates on effects rather than causes (Walters, 1985). As a result, the organizational structures and contexts that engender workplace risk are neglected. At the same time, the entrenchment of management rights in statutory regulations and collective agreements diverts attention from organizational factors (D.B. Baker, 1985). Furthermore, in reflecting utilitarian goals of efficiency and productivity (Sass, 1989), public policy only impedes a critical assessment of the role of organizations in the production and reproduction of work hazards.

The magnitude of the problem created for workers by hazardous work exposures demands that multiple and innovative approaches be taken. In 1990, a minimum of 43,470 Albertans were injured at work and 120 were killed or died due to work-related exposures (Alberta Occupational Health and Safety, 1991). The direct cost of work-related injuries, accidents, disease, and fatalities was $310 million in 1988 and exceeded $1.1 million per day by 1990 in Alberta (Workers' Compensation Board - Alberta, 1989; Weir, 1990). Indirect costs were estimated to be close to $2 billion per year (Gordon, 1989; Premier's Commission on Future Health Care for Albertans, 1989). Despite the limitations of industry-funded research and government research priorities, research in various fields of enquiry links the workplace with the two leading causes of mortality in the population, cancer and heart disease (S.S. Epstein, 1988; Guidotti & Goldsmith, 1986; "Occupational cancer", 1986; Schottenfeld & Haas, 1978a, b; Siemiatycki, Day, Fabry, & Cooper, 1981; Tesh, 1981). S.S. Epstein (1990) argues that substantive evidence supports a relationship between the incidence of cancer and exposure to occupational carcinogens, but that industry, government, and a cadre of scientists are blocking preventive measures. He advocates the translation of the cancer prevention rhetoric into an "educational offensive" (p. 66) to develop grassroot pressure for change. With respect to coronary heart disease, research correlates the organization and content of work with morbidity (House, 1980; Johnson & Hall, 1988; Karasek, 1990; Karasek & Theorell, 1990; Karasek et al., 1988; Knox, Theorell, Svensson, & Waller, 1985; Marmot & Theorell, 1988; Schwartz, Pieper, & Karasek, 1988). Karasek and Theorell (1990) provide substantial evidence for the debate on public policy by their systematic application of a model of psychosocial job structure to heart disease research. Their research places the work environment rather than the individual at the centre of inquiry into cardiovascular disease.

Risks for children and the unborn are also associated with the workplace. For example, leaded environments are known to cause abortions, congenital defects, stillbirths, and reduced fertility (Cunningham, 1986) and, although it causes psychological impairment in children, lead has been allowed to persist in the environment (Needleman, 1989). Bregman, Anderson, Buffler, and Salg (1989) challenge the public health community to address *all* work-related disorders of reproduction. They argue that hazard surveillance is necessary for the identification and control of occupational sources of infertility, fetal and neonatal deaths, congenital defects, childhood malignancies, and more.

On a broader scale, Epp (1986) calls for increased prevention, healthier environments, and stronger community health services. Indeed, healthy environments figure prominently in federal, provincial, and international conceptual frameworks for health promotion (Epp, 1986; Health and Welfare Canada, 1990; Perkins, 1991; Premier's Commission on Future Health Care for Albertans, 1989; World Health Organization, Health and Welfare Canada, & Canadian Public Health Association, 1986). Recognizing the interface between lifestyle and the physical, social, economic, and political environments, Health and Welfare Canada (1990) encourages health care facilities to take health promotion beyond lifestyle to well-being and environments more conducive to health. The Premier's Commission on Future Health Care for Albertans (1989) recommends that health care facilities become "role models of healthy environments and practices" (1989, p. 64), a recommendation supported by the Alberta Association of Registered Nurses (1990). Currently, the public health sector is incorporating strategies for health promotion and healthy public policy into traditional programs of disease prevention ("APHA Responds", 1991; Green & Kreuter, 1990; Hancock, 1985; Labonte, 1989; O'Neill, 1989/90; Rossignol, 1991; Stachtchenko & Jenicek, 1990). For Wegman and Fine (1990), public health practitioners must strengthen their role in the prevention of work hazards.

As advocates of healthy and supportive work environments, community health nurses (CHNs) have an important role to fulfill in workplace health programs (Ostwald & Williams, 1987), but the work hazards of health care workers have been neglected (Coleman & Dickinson, 1984; Emmett & Baetz, 1987; Haché-Faulkner & MacKay, 1985; Rogers, 1989; Yassi & Guidotti, 1990; Zoloth & Stellman, 1987). It is a paradox that the very professionals expected to promote and protect health may themselves be employed in unhealthy, unsafe work environments. By concentrating on the provision of quality health care for the Canadian public, the health care delivery system has overlooked the health and safety of its employees. Due in part to the marginalization of occupational health professionals within mainstream health care, the neglect of health care workers also stems from the failure of legislation in the occupational health field to provide adequate direction for identifying vulnerable workers. Professional ideologies of caring only enhance the neglect by virtue of their focus on the care recipient, not caregiver.

Limited data are available for the work settings of the professionals providing health services in the community (Emmett & Baetz, 1987), although it is now recognized that hospitals may be unhealthy work environments (Astbury & Baxter, 1990; Coleman & Dickinson, 1984; Estryn-Behar et al., 1990; Gestal, 1987; Guidotti, 1987a; Hadley, 1990; Haney, Raymond, & Lewis, 1990; Hemminki, Kyyrononen, & Lindbohm, 1985; Hipwell, Tyler, & Wilson, 1989; Neuberger, Kammerdiener, & Wood, 1988; Orr, 1988; Patterson et al., 1985; Selevan, Lindbohm, Hornung, & Hemminki, 1985; Triolo, 1989a, b; Zoloth & Stellman, 1987). Yet it is the community health professional who is expected to demonstrate leadership in health promotion to the public (Canadian Public Health Association, 1990; Epp, 1986; Hancock, 1985; Kreiger, 1990; Lancaster, 1984; Premier's Commission on Future Health Care for Albertans, 1989; Rosenstock & Landrigan, 1986; Turshen, 1989; Winett et al., 1989). Employees in the community-based health care system have not engaged in a comprehensive assessment of their work hazards and organizations in the community-based health care system have not undergone a critical assessment of their role in the production and reproduction of work hazards. By thoroughly examining their own work environments, the sensitivity of CHNs to the work environments of the public they serve may be further enhanced and serve as a stimulus for more responsive community health services.

The purpose of this exploratory study therefore was three-fold: (1) to identify and describe the occupational hazards perceived by community health nurses[1] employed in public health units in the Province of Alberta, (2) to explore the organizational factors underlying these perceived hazards, and (3) to describe the strategies generated by community health nurses to make their work environments healthier and safer, after a discussion of the identified hazards. As employees, managers, and service providers, CHNs are in a critical position for reducing work-related exposures in their own environments and the environments of the populations they serve. Their focus on hazard identification and reduction for workers would encompass the ages 18 to 65, a significant element of the population. Their assessment of workplace reproductive hazards would benefit an even more vulnerable population. Accordingly, the practical objective of the study was to assist a neglected sector of health professionals to assess their own work environments and to incorporate work-oriented preventive education into their professional practice. The theoretical objective of the research was to contribute to substantive theory development on the organizational determinants of work hazards by providing the elements of a grounded theory. The grounded theory method of research goes beyond the description of a situation to a conceptualization of it (Munhall, 1989).

Because the workplace hazards of CHNs are underscrutinized, the research has a descriptive component. Descriptive research is typically cross-sectional, nonexperimental, and appropriate for theory building or theory testing (Brink & Wood, 1989). In this study, the descriptive component provides not only an account of the biological, chemical, ergonomic, physical, and psychosocial hazards perceived by CHNs in their work environments, but also a determination of the demographic characteristics of the CHN sample. Although five categories of occupational hazards have been well-established in the occupational health literature for at least a decade (Felton, 1980; Guidotti et al., 1983; Olishifski & Plog, 1988; Shindell & Goldberg, 1981), no comprehensive use of the categories has been made with CHNs in the health care industry. Therefore, the first stage of this research included the collection of data on one broad variable: the occupational hazards perceived by CHNs in health units. A complete description of the variable lays the groundwork for the analysis of the organizational factors associated with them.

A better understanding of work hazards in a specific type of health service organization required an exploratory design. That is, a design that would permit the study of fundamental patterns or processes among respondents' perceptions; a design that would identify the underlying antecedent, contextual, and processual factors (Brink, 1989). An exploratory design is based on the assumption that respondents have personal experience with the problems, but that the problems have not been studied from their perspective (Brink, 1989). The researcher must acknowledge the reality perceived by the respondents, setting aside personal preconceptions, biases, and beliefs as far as possible. Exploration permits the social scientist to comprehend an unfamiliar sphere of life and to ground the acquired understanding in empirical reality (Blumer, 1969). The exploratory nature of this research was maximized to identify as fully as possible the organizational factors that CHNs associated with the production and reproduction of their perceived work hazards. Such factor-searching activity is the formulative stage of theory building (Field & Morse, 1985).

The study proceeded inductively and deductively, guided by four major research questions: (1) What are the biological, chemical, ergonomic, physical, and psychosocial hazards that community health nurses perceive in their work environments? (2) What organizational factors underlie the hazards perceived by community health nurses in their work environments? (3) What factors in the external environment of each health unit underlie the hazards that community health nurses perceive in their work environments? (4) What practical strategies do informed community health nurses generate for reducing the hazards they perceive in their work environments? The first question was refined to "What are the actual or potential biological, chemical, ergonomic, physical, psychosocial, reproductive, and safety hazards that community health nurses perceive in their work environments?" By including the two hazards (safety and reproductive) that are composites of the five generic hazards, risks to safety and reproduction were made more explicit. The refinement accorded attention to the principal hazard (safety) identified by subjects in their physical work environments and to a hazard that could not be discounted (reproductive) even though it was clearly minimized by the vast majority of subjects. Similarly, it sharpened the distinctions that became apparent among the health units regarding potential and actual hazards (e.g., client physical abuse, seroconversion to HIV positive). To place emphasis on the organizational focus of the research, the fourth question was reformulated as "What are the organizationally oriented strategies that informed community health nurses generate for reducing the hazards they perceive in their work environments?"

This study used multiple data collection methods to answer the four research questions. First, questionnaires addressed the *types* or *nature* of work hazards. Second, interviews explored the *organizational* structures and contexts underlying the hazards; analysis of public documents further extended the structural data. Third, focus groups capitalized on the interactive group process to generate ideas for reducing hazards in the work environment. Multiple triangulation facilitated confirmation of the results for CHNs' perceived work hazards and exploration of the organizational context of those hazards. Pursuit of the holistic injunction (Noblit & Engel, 1991) using theoretical, methodological, data source, and unit of analysis triangulation met ethical and theoretical imperatives for the presentation, interpretation, and synthesis of CHNs' accounts of their work hazards and the organizational factors associated with them.

Although limited in its generalizability by the use of a small, nonrandom sample in one Canadian province, the precautions taken during sample selection open up the possibility of cautious generalization. Inclusion of the obvious organizational differences in the sample ensured representation of the known characteristics shared by health units across the province. Pretesting with health units from within and outside the sample population provided an opportunity for additional differences to surface. Inclusion of non-study participants in the focus groups provided opportunities to dispute the results. Normally, a limitation of the study would be a sample of all one sex. Because 96% of all nurses are women, this sample is more representative of the population of interest than is a mixed sample. Since all health units in the Province of Alberta share the same mandate under the legislation, it is reasonable to expect commonalities among Alberta organizations. Finally, multiple triangulation enhanced the study's generalizability because more than one autonomous organization was studied, multiple informants in each organization contributed their perspectives, and more than one data gathering technique was used.

This is a study that makes a contribution to sociology, organizational analysis, occupational health, and public health. For the sociology of health, it increases our understanding of the complex relationship between organizational and systemic social factors and hazards to health and safety among health care providers in an understudied human service organization, the public health unit. For the sociology of work, it addresses the contradictions in the labour process between the protection of employee health and the goal of production (viz., service) and illuminates the complexity of power differentials associated with work hazards. For organizational analysis, it identifies organizational factors that are associated with the creation and persistence of work hazards with implications for management, and provides an additional element for discussions on policy for hazard surveillance at the organizational level. Applied to the field of occupational health, it provides empirical data on health care industry workers who have been neglected by occupational health specialists, suggesting directions for future quantitative studies and alternative explanations for the existence of hazards.[2] It alerts policy makers and practitioners in the public health field to the perceived hazards and provides guidance for organizationally oriented action. Grounded in the experience, dialogue, and creativity of community health nurses, this research contributes elements of a theory on organizational hazard surveillance.

Having introduced the problem, methods, parameters, and significance of this study, it is now appropriate to provide an outline of the thesis. Chapter Two reviews the literature for two related but distinct purposes: a theoretical orientation and a critical assessment of the substantive literature on CHNs' work hazards. By breaking through the theoretical traditions of the occupational health field to incorporate a sociological perspective informed by organization theory, the problem of work hazards is reconceptualized. Using a typology of work hazards from the occupational health field and the new theoretical perspective, the research on CHNs' work hazards is examined for its findings on work hazards and the organizational factors associated with them. Chapter Three describes the qualitative and quantitative methods used in this exploratory design to answer the research questions and generate the elements of a grounded theory. As well, the chapter discusses the use of multiple triangulation in the search for convergence and divergence.

A pair of chapters present CHNs' perceived hazards in their physical and psychosocial work environments. Chapter Four presents the discounted, secondary, and significant hazards in the physical work environments and Chapter Five presents the most significant hazards for the CHNs in this sample. Chapter Six discusses the findings in relation to the literature review on hazards and their organizational determinants; presents the focus group data for hazard reduction; and advances the argument, on empirical and theoretical grounds, that an analysis of the linkages between organizational factors and work hazards is essential. Chapter Seven presents the results of the constant comparative analysis of the interview data on organizational factors underlying the work hazards. The chapter is a discussion of the basic social structural process that unites the data from the health units yet reflects their variation. The theme of power and dependency runs throughout the four major categories that capture organizational dimensions associated with CHNs' work hazards. These categories constitute the elements of a grounded theory on organizational hazard surveillance. The final chapter, Chapter Eight, presents conclusions and directions for future research.

Footnotes

1 In some Canadian jurisdictions the terms 'community health nurse' and 'public health nurse' are synonymous; in others, 'public health nurse' is incorporated under the umbrella of 'community health nurse' (Canadian Public Health Association, 1990) and refers to the professional who focusses on health promotion for the public (as distinct from the professional who provides mental health or home care services which are more treatment-oriented or the professional who provides occupational health services for employed individuals). In the initial stages of this research, the term 'community health nurse' was in common use. By the time the dissertation was being completed, a trend toward the use of 'public health nurse' had become apparent. For consistency, 'community health nurse' will be used throughout and refers to the professional whose primary focus is health promotion for the public.

2 Occupational health practitioners generally use the two dominant paradigms (i.e., lifestyle and environment).

CHAPTER 2: REVIEW OF RELATED LITERATURE

An integrative literature review in conjunction with a sociological orientation and professional background in both occupational health and public health shaped the focus of this research. Literature from four research traditions contributed to the theoretical orientation that guided question formulation, critical assessment of the substantive research on community health nurse (CHN) work hazards, and the research design. Concepts from sociology, occupational health, organizational analysis, and public health were fundamental to the definition and delimitation of the theoretical orientation. This interdisciplinary approach permitted a more detailed analysis of work hazards with an emphasis on an overlooked area in occupational health and safety. An integrative approach permitted individual employee examination of the structural and contextual dimensions in the physical and social work environments that affect hazards.

The combination of micro and macrosociological perspectives in this research maximized the potential for coherence and congruence during the collection and analysis of the data. The centrality of the individual (microsociology) in the labour process was substantiated at the same time that new ground was being broken for the discovery of organizational factors (macrosociology) implicated in work hazards. Four bodies of literature framed data collection and analysis for two major variables of interest (work hazards and their related organizational factors). A typology of occupational hazards served to guide the literature review, questionnaire elaboration, interview focus, and focus group encounters. At the same time, boundaries of knowledge were expanded through increased awareness of the contingencies that come to bear on work hazards. An open systems model emphasized the dynamics between organizations and their environments, the diversity of organizational characteristics, and the variation of work hazards. Contingency theory led to the discovery of central concepts for the basic social structural process that emerged from the data. Last, well-documented structural and contextual dimensions of the organization directed collection of data by questionnaire, interview, and focus group.

The chapter is divided into two major sections. The first section describes the synthesis of the guiding theoretical concepts from the reading of the theoretical literature. The second section is a critique of the substantive literature on CHNs' work hazards using the typology of hazards employed in the occupational health field and the concepts from organization theory. The chapter concludes with the argument that theoretically and empirically, the organizational context of work hazards demands exploration.

Theoretical Orientation

The process of framing the general research questions, defining the parameters of the research, and developing a perspective to guide the research methods began with contributions from the theoretical and empirical literatures. In order to render a substantive grounded theory, it was important to demonstrate theoretical sensitivity, that combination of personal experience, professional background, analytical process, and review of the literature (Glaser, 1978; Strauss & Corbin, 1990). First, I located the research problem in the theoretical traditions of the occupational health field. This raised issues for exploration that required a reconceptualization of the problem of work hazards. Implicit and explicit knowledge from professional practice provided a rich base for developing the insights used to refine the research questions and take a new perspective. Relocation of the problem area within the tradition of organizational theory opened up a new way of looking at work hazards, a process similar to the realignment of a glass prism. The sociological imagination (Krisberg, 1978; Mills, 1959) gave form to the search for pattern and regularity in the reconceptualized problem by pushing to the edge the probes for underlying structure.

Occupational Health

The specialty of occupational health is dedicated to the protection of the safety and health of all individuals in their work environments. An overview of its multidisciplinary nature, dominant paradigms, and development as a specialty sheds light on the limitations of the substantive literature on CHNs' work hazards, while also yielding a typology of work hazards for assessing the comprehensiveness of the substantive literature. In previous research (Skillen, 1988), the review of the literature revealed common use of the four industrial hygiene categories, plus additional categories from other health and safety professionals. Seven major categories of hazard in the workplace were identified. This section begins with a description of the occupational health field, proceeds to identify its limitations for dealing with the organizational context of work hazards, and concludes with the major categories of hazards used for assessing the workplace.

Disciplinary and Theoretical Pluralism

Although the basic principles derive from public health and clinical medicine (Rosenstock & Landrigan, 1986), the occupational health field is multidisciplinary and includes safety engineers, toxicologists, lawyers, physicians, economists, nurses, industrial hygienists, and health educators. Each profession brings its own theoretical perspective to the field, which contributes to theoretical fragmentation. Environmental hazard studies are informed primarily by theories from disciplines in the natural sciences such as anatomy, biology, chemistry, engineering, physics, physiology, and toxicology. Lifestyle and health promotion research, on the other hand, is heavily influenced by theories from physiology, psychology, and social psychology (D.B. Baker, 1985; Castillo-Salgado, 1987; Cooper, 1987a; Fielding, 1984; Frankenhaeuser, 1981; Lazarus & Folkman, 1984; Parasuraman & Hansen, 1987; Selye, 1976). The clinical medicine or biomedical component of occupational health reinforces the individualistic approach (White, 1991). As long as the biomedical model receives greater systemic support than the public health model (Jefferys, 1991) and researchers in the natural sciences rarely collaborate with those in the social sciences,[1] investigation of organizational and institutional factors will be limited. While the environmental and lifestyle approaches represent the dominant paradigms in the field (Castillo-Salgado, 1987), the epidemiological approach of disease and injury surveillance (Landrigan, 1989; Wegman & Froines, 1985) provides after-the-fact assessment (Walters, 1985), contingent upon reporting mechanisms, classification of disease as work-related, accurate medical diagnoses, and comprehensive statistics. Disease and injury surveillance are conducted principally at provincial and federal levels of government; reports include body part affected, disease, nature of the industry, and location, but not the characteristics of work organizations.

Legislation is vital to both the environmental and epidemiological perspectives and predates the current emphasis on individual behaviour modification. The Alberta Occupational Health and Safety Act of 1976 integrated disparate provincial Acts on health and safety, but did not regulate occupational health services for workplaces with less than 200 employees. As a consequence, approximately three-quarters of the workforce does not have access to on-site health services and hazard surveillance, although some small business employers (who constitute 96% of all businesses registered with the Workers' Compensation Board) voluntarily comply with the regulations.[2] The majority of workers must rely on community-based health professionals for the evaluation and treatment of their work-related health problems (Goldbaum, 1981). Health professionals in the public sector who confront occupational health problems without the benefit of worksite observations or education in occupational health (Markham & Fisher, 1987; Spiegel & Yassi, 1991; Weeks, 1990; Wegman & Froines, 1986), may misdiagnose workers' ailments.

Specialization

Efforts have been made to improve the level of professionals' knowledge regarding work-related medical disorders. Registered nurses employed in the field agitated for the development of a certificate course in occupational health nursing that began in 1974 (Dawson, 1987). Since 1984, over 800 occupational health nurses have obtained Canadian certification in the specialty (Graham, 1992). The approval of occupational medicine as a specialty by the Canadian College of Physicians and Surgeons in 1984 and Canadian certification of occupational health physicians in 1988 have increased the credibility of the occupational health physician in mainstream health care, but this has been tempered by economic strains and public policy shifts in the 1980s and the discretionary powers of employers (Weeks, 1990; Yassi, 1988). The bulk of occupational health services in Alberta are currently provided by roughly 400 occupational health nurses and those salaried or contract physicians who are employed primarily by private industry. Yet Walters' research on company doctors (1982, 1985, 1987) has raised serious doubts about the ability of general practitioners contracted by industry and salaried specialists in corporations to identify occupational health problems. Nelkin (1985), Walters (1985), and Weeks (1990) suggest that the context of salaried employment shapes the content of medical practice and creates conflicts of interest for occupational physicians. Pedersen, Venable, & Sieber (1990) conclude that the off-site practice of occupational medicine also has deficiencies. Wegman and Fine (1990) call for *public health* practitioners to address occupational hazards and outcomes and to strengthen their role in the prevention of hazardous exposures.

Limitations of Statistics

The limitations of official statistics constrain occupational health specialists and public health organizations in program planning. Work injuries and disease are not even reported for the 20-25% of the labour force that is uninsured with the Workers' Compensation Board (WCB)[3] (Digby & Riddell, 1986). This numerical bias creates a gender bias, because the industries not covered by WCB have concentrations of female workers (Statistics Canada, March 1988). Skewed statistics deflect attention from the occupational hazards of a female-dominated segment of the labour force and make more apparent the workplace risk for men. For example, a brochure on Albertan statistics states that "approximately eight out of every 10 workers injured on the job were male" in 1990 (Alberta Occupational Health and Safety, 1991).

Even for the workforce insured under workers' compensation legislation, statistics are underestimated. Occupational disease is not readily diagnosed (Seligman & Matte, 1991). Long latency periods obscure cause-effect relationships (Spiegel & Yassi, 1991) and clinical laboratory tests lack specificity and sensitivity (Rosenstock, Logerfu, Heyer, & Carter, 1984). Work-related diseases are rarely distinguishable from conditions that are non-occupational in origin (Goldbaum, 1981). Community-based physicians neglect to take occupational histories and WCB recognizes only a limited number of diseases as legitimately work-related.[4] Occupational injuries are also under-reported. Accident-based WCB fee assessments promote employer concealment practices. Ineffective health and safety committees reduce surveillance and documentation of worksite hazards. Fears of recrimination and economic pressures inhibit worker claims. In short, statistics on the differential distribution of morbidity and mortality across industries may only be used guardedly. At a minimum, 43,470 Albertans were injured and 120 were killed or died due to illness because of their work in 1990 (AOHS, 1991). The profound social and economic costs that accompany the effects of occupational hazards cannot be fully comprehended. No monetary value can be placed on pain, suffering, and family dysfunction, but data are accessible for industrial costs based on the available statistics. In Alberta, the direct costs of work-related injuries, accidents, disease, and fatalities reached $310 million in 1988 and exceeded $1.1 million per day by 1990 (WCB, 1989; Weir, 1990). The indirect costs were estimated to be close to $2 billion per year (Gordon, 1989). The sheer magnitude and persistence of the problem demands an innovative approach, focussing on prevention as well as rehabilitation.

Trends in Prevention

Workers' compensation is closely linked with the statistically focussed epidemiological approach. By developing separately from health care insurance plans and focussing on rehabilitation (tertiary prevention) rather than primary prevention, compensation policies and mechanisms inhibit the coordination of a direct attack on work hazards. To illustrate, workers' compensation was mandated in Alberta as early as 1918, but public servants were not insured until 1981. Further, by classifying industries on the basis of WCB-legitimated disease or injury, hazards outside of those recognized officially are ignored. As an example, nursing services and the operation of health units are in the same classification of low risk industries as libraries, art galleries, and tattoo parlours, among others (Workers' Compensation Board - Alberta, 1983), despite the apparent disparities in work hazards.

Historically, the preventive emphasis in occupational health and safety began with regulatory processes and continued with the modification of individual behaviour (Winett, King, & Altman, 1989). Public policy changes, however, now reflect a rise in neo-conservative ideology among provincial governments and emphasize the interests of capital: productivity, efficiency, growth, and profit (Kumar, 1988; Panitch & Swartz, 1988; Sass, 1986, 1989). The resultant downsizing of governmental occupational health and safety divisions has led to reduced direct services (including regulatory enforcement), privatization of previously available medical and nursing consultant services, and fragmentary surveillance of workplace hazards (Alberta Health, 1989; Casella, 1989; "Death Toll", 1988; "Firms Finding", 1988; Kumar, 1988; Locherty & Ramondt, 1988; Ramondt, 1988; Sass, 1989). Introduction of the internal responsibility system by regulatory bodies (Alberta Health, 1989; Alberta Workers' Health, Safety and Compensation, 1985) has placed the onus for safe operations on individual employers, reducing opportunities for broad consciousness-raising, collective action (Lambright, 1985; Walters, 1985, Walters & Haines, 1988), and comprehensive assessments of occupational hazards by professionals who are not compromised in salaried relationships with individual employers.

At the same time that regulatory practices have been undergoing change, worksite health promotion (lifestyle) programs emphasizing individual responsibility for health have become entrenched (Terborg, 1988), although not without criticism (Alexander, 1988; Burdine, McLeroy, & Gottlieb, 1987; Conrad, 1988; Green, 1988; L.S. Levin, 1987; McDaniel, 1987; McLeroy, Gottlieb, & Burdine, 1987; Pellegrino, 1981; Sloan, 1987; Spasoff, 1990; Walsh, 1988; Wikler, 1987; Zechetmayr, 1989). The individualistic ideology now predominating in occupational health research reinforces inaction at the organizational level of response. Programs are directed to individuals as consumers not workers (McDaniel, 1987; Navarro, 1982, 1986), as self-indulging risk-takers (Wikler, 1987), as presumed possessors of middle-class values (Conrad, 1988; L.S. Levin, 1987), and as masters of their own fate (Epp, 1986). They perpetuate a 'blaming the victim' ideology (M.H. Becker, 1986; Castillo-Salgado, 1987; Epp, 1986; Green, 1988; McLeroy et al., 1987; Orr, 1988; Quinlan, 1988; W. Ryan, 1971; Sass, 1986; Tesh, 1986; Wikler, 1987). Victim-blaming overlooks occupational causes for disease, injury, chronic conditions, reproductive outcomes, or stress and implicitly assumes a homogeneous workplace. It deters the examination of organizational factors and occupational hazards (M.H. Becker, 1986; Chavkin, 1984; Conrad, 1988; Feagin, 1986; Green, 1988; McDaniel, 1987; Sloan, 1987; Wikler, 1987), disregards the labour process (Sloan, 1987), and ignores the differential distribution of workplace morbidity and mortality. Zechetmayr (1989) posits that management uses health promotion to subtly manipulate a workforce that has become more knowledgeable as it has shifted from a manufacturing to service technology and acquired a post-secondary education base. By focussing on the individual, health promotion programs shift attention away from the organization and the work environment (Conrad, 1988).

Organizational Context

Threats to health and safety that are beyond the control of the individual exist in organizations (Janssens, Grotenhuis, Michiels, & Verhaegen, 1989; Perrow, 1984; Sloan, 1987). Individual behaviours are influenced by the social environment (Dwyer, 1991; McLeroy et al., 1987) and it is unrealistic to expect that individuals have total control (Epp, 1986; Green, 1988). Accidents occur in high-risk technologies because of tightly coupled organizational systems requiring centralization, in the presence of interactive (nonlinear) complexity requiring decentralization (Perrow, 1984). Accidents may also reflect internal management practices, external economic factors (Snyder, Himmelstein, Pransky, & Beavers, 1991), or failures of organizational and interorganizational foresight (B.A. Turner, 1976). The organization must continually evaluate its safety operations (Hale, 1990). Corridors of power may create structural barriers to healthy behaviour (L.S. Levin, 1987) and vested interests can lie at the centre of workplace health and safety (Walsh, 1988). Despite this, a large literature concentrates solely on the modification of *individual* health behaviour and neglects the hazardous context in which it is embedded. Alternative explanations for workers' social reality emerge only with difficulty (Alexander, 1988).

In the arena of industrial crisis management, empirical research indicates the relevance of the organizational context for safety.

Accidents and organizationally based disasters are socially constructed errors (Dwyer, 1991; Gephart, 1988). Janssens et al. (1989) observed that status differences impede the smooth exchange of information among knowledgeable employees. In fact, management personnel may base decisions on standardized procedures without any direct experience of an accident (e.g., chemical leak). This may result in the emergence of informal structures that are inconsistent with formal organizational rules and goals. Safety goals and practices become secondary to the organizational goal of a favourable public profile, if not of productivity and profit. Both the technology and the environment of the organization must be considered when organizationally based disasters are confronted (Gephart, 1988; Shrivastava, Mitroff, Miller, & Miglani, 1988). Industrial crises are a technological, social, organizational, and political problem (Shrivastava, 1988). In short, research at the macro level supports the argument that structural and contextual dimensions of organizations have relevance for the production and management of hazards.

At the *micro* level, the predominance of the individualistic approach and neglect of organizational factors unites the perspectives of workers' compensation, medical care, and occupational health. Dwyer's (1991) historical reflections on accidents illustrate how technical safety devices desocialized accidents, removing them from their social context. Accidents have also been explained by conflicting, flawed, or underdeveloped theories (Dwyer, 1991; Harvey, 1985; James, 1987; Linder, 1987; T. Ryan, 1987; Sass, 1989). The methodologically flawed research by Heinrich in the 1930s emphasized unsafe acts and conditions as the only determinants of accidents (Harvey, 1985; T. Ryan, 1987; Wuorinen, 1991). Sass (1985) points out that Heinrich used a large number of employer-provided accident reports, and excluded supervisors' incorrect instructions, poor communication, and employers' failure to ensure installation and maintenance of machine guards. Heinrich's influence continues to affect the direction of compensatory and educational programs (Saari, 1990) and underlies the concept of accident proneness (Sass, 1985; Sass & Crook, 1981). Essentially social psychological in nature, this concept exemplifies fundamental attribution error (Baron & Byrne, 1987) by explaining unsafe actions with dispositional rather than situational causes. Dwyer (1991) argues that a case study approach would avoid research methods that blame the worker and ignore how safety is negotiated. In his sociological theory of accidents, he proposes that rewards, command, and organization (i.e., division of labour), all organizational factors, create the conditions for accidents.

For James (1987), accidents are nondispositional, unintentional consequences of work that are embedded in the social relations of production. Field research in a highly automated factory identified enough conflicting explanations for injuries that James considered workplace injury to reflect industrial conflict, not victim fallibility. Indeed, the conflicting interests of capital, labour, government, and the professions create deficiencies in injury assessment that are paradigmatic in nature (Linder, 1987). The behavioural premises presently emphasized have implications for public policy, imposing constraints on the level of analysis and the formulation of strategies.

In contrast to accidents which are observable, quantifiable, and time-limited, hazards to health are frequently insidious, cumulative, and synergistic (Weeks & Jordan, 1985). Their very nature makes no public demands on the organizational hierarchy. Without immediacy, they are easily ignored and subordinated to production or service goals. But they do not develop in isolation from the organizational context. Management styles, physical and psychosocial job demands, work monotony, decision latitude, job insecurity, technological change, work overload, sexual harassment, and smoking policies are but a few of the organizational factors that compromise health and well-being (Cohen & White, 1986, 1987; Conrad, 1987; Feldberg & Glenn, 1979; Frankenhaeuser, 1981; Karasek & Theorell, 1990; Landsbergis, 1988; Lowe, 1989; McDaniel, 1987; Parkes, 1990; Wallace, 1989).

Modifying hazardous work conditions and changing the organizational structures that contribute to hazard production and reproduction might make workplace health promotion less subject to individual factors and, therefore, more effective. Research suggests that social relations and structural working conditions, not personal characteristics, determine employee reactions to the conditions under which they work (Dwyer, 1991; House, 1980; Kanter, 1977; Lowe & Northcott, 1988; Oldham & Hackman, 1981). Related research linking environmental attitudes with behaviours shows that macro-structural conditions do promote effective behaviours (Derksen, 1990). A focus on organizational factors might assist *service*-oriented health care organizations to become more *health*-oriented. The Premier's Commission on Future Health Care for Albertans (1989) envisages a future with healthy, safe work environments that are exemplified by Alberta's health care facilities. This will require a new perspective to counteract an individualistic approach reinforced by the biomedical model, theories of accident causation, victim-blaming, and the lifestyle paradigm.

Categories of Work Hazards

The environmental perspective contrasts with the individualistic approach by focussing on quantifiable hazards in the workplace. Central to this approach is the measurement of the hazard and its evaluation against an industrial standard (Olishifski & Plog, 1988). The paradigm, which is used by industrial hygienists, contributes four categories to a typology of hazards for the workplace: biological, chemical, ergonomic, and physical (Olishifski & Plog, 1988). This classification, however, ignores the psychosocial domain and is incomplete.

Traditionally, researchers in occupational health and safety have concentrated on hazards in the physical work environment, in particular on chemical, physical, and safety hazards (House & Jackman, 1979; Karasek & Theorell, 1990; Weinstein, 1985). To be sure, workers perceive serious hazards in the physical environments of the goods-producing sector of the economy (Robinson, 1987). Hazards must be monitored and preventive efforts continued if traumatic injuries, chronic diseases (e.g., silicosis), and industrial accidents (e.g., pipeline leaks) are to be controlled and eliminated. Accidents and insidious, cumulative, and synergistic hazards to health in high risk industries cannot be ignored. Nevertheless, psychosocial hazards must also be acknowledged, evaluated, and controlled. While psychosocial stressors should not be ignored in the goods-producing sector, especially among the blue-collar workers (Cooper, 1987b; Manga, 1979), neither should the service sector be neglected because of its relatively lower risks in the physical work environment. The service sector now comprises over 70% of the labour force (Krahn, 1992) and merits attention for its "less tangible, but equally debilitating" hazards (Weinstein, 1985, p. 53). According to Parasuraman and Hansen (1987), psychosocial work stressors are particularly severe in human service organizations and may be organizationally as well as occupationally generated. Other research links psychosocial stressors at work to occupational morbidity and mortality (Emery, 1985; Gardell, 1982; Glowinkowski & Cooper, 1986; House, 1980; House & Jackman, 1979; Karasek, 1990; Karasek et al., 1988; Karasek & Theorell, 1990; Klitzman, House, Israel, & Mero, 1990; Landsbergis, 1988; Leppanen & Olkinuora, 1987; Lerner, 1982; Levi, 1989, 1990; Lowe, 1989; Parasuraman & Hansen, 1987; Weinstein, 1985; Yu, Mansfield, Packard, Vicary, & McCool, 1989). These psychosocial stressors are ubiquitous in the workplace and any notion of encountering or achieving completely stressor-free work environments is unrealistic (Antonovsky, 1987; Zaccaro & Riley, 1987). Therefore, the typology must include the psychosocial category of hazards (Felton, 1980; Rogers & Haynes, 1991; Skillen, 1988; Triolo, 1989a).

From the standpoint of fiscal, moral, and social responsibilities, organizations have a stake in reducing stressors in the workplace (Karasek & Theorell, 1990; Perrewe & Ganster, 1989; Sass, 1986, 1989; Viscusi, 1983). However, individually oriented approaches to workplace stressors have predominated in organizations, likely due to the ease with which they are implemented, the avoidance of structural change, and the ideology that work stressors are a problem of the individual (Celentano & Johnson, 1987; Cooper, 1987a; Gardell, 1982; Hadziolova, 1987; Herd, 1988; Lazarus, 1987; Murphy & Hurell, 1987; Nahrwold, 1987; Rosen & Lee, 1987; Terborg, 1988; Winett et al., 1989). Research by Karasek (1979) and Karasek and Theorell (1990) challenges this ideology by documenting causal mechanisms for coronary heart disease in the organization of work using the interactive demand/control model. Karasek and Theorell have brought psychosocial demands in the workplace to the forefront of worker health issues in both the goods-producing and service sectors and turned the individual orientation to work stressors on its head by placing work organization at the centre of inquiry. Their basic two-dimensional model employs measures of the psychosocial work environment, in terms of social interaction and physical demand, interacting with measures of decision latitude, as indicated by decision authority and discretionary use of skills. The model is used to predict the effects of work structure on behaviour and health and demonstrates that organizational design is important for both health and productivity (Karasek et al., 1988).

In addition to the psychosocial category, there are two composite categories, safety and reproductive hazards, which may be created by any of the first five categories (Desrosiers, Torres-Moreno, & Smith, 1987; Mamelle, Laumon, & Lazur, 1984; Miller, 1986; Rogan, 1986; von Hauff, 1990; Whorton, 1986). These seven categories constitute the typology used to assess the comprehensiveness of the substantive literature and to develop the questionnaire. In this exploratory research, their contribution is verificational rather than classificatory. Although they identify the mass and energy constituting a hazard, they still ignore the dimensions of the organization that inhibit or facilitate the production and reproduction of those hazards.

In summary, the individualistic, environmental, and epidemiological paradigms in the occupational health field do not seek information about the organizational dimensions of work hazards. This research examines the theoretical underpinnings of the occupational health field to better understand the role of organizational factors. Reconceptualization of the problem of work hazards within the context of organization theory is necessary for closer scrutiny of the organizational context of work hazards.

Reconceptualization of the Problem of Work Hazards

Identification of the organizational factors associated with work hazards requires the redefinition of work hazards as a problem of the organization not the individual and relocation within the context of organization theory. This permits organizational characteristics to be examined and compared in the search for pattern and regularity. With roots in sociological traditions and utilization by industrial sociologists, occupational sociologists, and organizational theorists (Burrell & Morgan, 1979; Collins, 1988), the functionalist paradigm represents a sociological paradigm as well as the dominant orthodoxy in organization studies (Burrell & Morgan, 1979).

The functionalist paradigm is the most appropriate point of departure in this exploratory research for a number of reasons. Its objectivist tradition has already established the structural and contextual dimensions of organizations for analytic purposes, and open systems theory permits the exploration of factors within and outside the organization. Although criticized for a managerial bias, the paradigm provides terminology familiar to managers, which is important for dissemination of the research results. Moreover, the influence of the interpretive tradition within the paradigm permits consideration of perspectives other than the managerial. The paradigm facilitates the collection of baseline organizational information because of its focus on the status quo, but the managerial bias in its application in organizational analysis restricts exploration of the topic of work hazards.

The concept of constituencies in organizations opens up another perspective (Cameron & Whetten, 1981, 1983a; Connolly, Conlon, & Deutsch, 1980; Friedlander & Pickle, 1968; Hannan & Freeman, 1977; March & Simon, 1958; Miner, 1982; Pennings & Goodman, 1977; Pondy, 1970; W.R. Scott, 1977; Scott, Flood, Ewy, & Forrest, 1978; Seashore, 1977). "A constituency is any group within or outside an organization that has a stake in the organization's performance" (Daft, 1989, pp. 104, 105). Constituencies determine the diversity, stratification, and compatibility of goals and influence decisions to maximize, satisfice, or sequence goals. They are imputed to harbour political processes and elusive power differentials and to hold diverse criteria of effectiveness (Cameron & Whetten, 1983a, b; Daft & Steers, 1986; Pennings & Goodman, 1977). Although numerous constituencies are associated with organizations (e.g., owners, directors, employees, customers, suppliers, government, the public-at-large [Friedlander & Pickle, 1968; W.R. Scott, 1977]), the reconceptualized problem of work hazards logically reduces the focus to employees of the organization. An employee perspective is central to a discussion of work hazards and organizational functioning. When the phenomenon of interest is the work environment, the constituents who perform there, have direct knowledge of the work and its technology, and experience positive and negative exposures, become the subjects in exploratory research. Taking an employee perspective permits exploration of the question, "What are the functional dimensions of organizations with respect to the recognition and reduction of work hazards?" and its corollary, "What are the dysfunctional dimensions?" The constituency approach forces the questions, "functional for whom?" and "dysfunctional for whom?"

In public health units the employee constituency is commonly divided into subunits by discipline, although this practice is undergoing transition to a programmatic division (Alberta Health, 1991a). The subunit "constitutes the pivot of organizational action" (Ashforth, 1985, p. 1). Since subunits represent distinct disciplines or services with presumably varied work hazards, they are an appropriate unit for examining work hazards within the context of organizational performance or effectiveness. A subunit provides a window to the organizational environment through its interfaces with external constituents. The subtle and varying influences of constituencies in the external environment may be identified more comprehensively through the perceptions of subunit participants. Subunits are also an appropriate unit of analysis for assessing internal structural phenomena, such as standardization of practices, specialization, formalization of procedures (Blau, 1970; Van de Ven & Ferry, 1980), or power (Calhoun & Scott, 1990; Pfeffer, 1981). Structures vary, however, in their ability to constrain the activities of constituents (Meyer, 1978). Structural conditions create both formal and informal positions of power over information control and communication (Krackhardt, 1990; Pfeffer, 1981). As early as 1962, Mechanic identified the control exercised by lower (non-managerial) participants in organizations over information, physical plant, and access to individual positions. Interdependencies among organizational subunits contribute to power differentials (Ashforth, 1985; Daft & Steers, 1986; Hickson, Hinings, Lee, Schneck, & Pennings, 1971; Hinings, Hickson, Pennings, & Schneck, 1974). The treatment by Hickson et al. (1971), Hinings et al. (1974), and Lachman (1989) of intraorganizational power make evident the relevance of contingencies such as centrality, substitutability, and coping with uncertainty. Although the issues of power and control are addressed infrequently in the functionalist paradigm, Burrell and Morgan (1979) consider that researchers such as Hickson et al. (1971) or Hinings et al. (1974) investigate sources of power from a more radical perspective, but one within the paradigm. According to Zey-Ferrell and Aiken (1981), power should be placed at the centre of analysis in the study of organizations. If power is ubiquitous and inevitable (Pfeffer, 1981), it could be expected to become an issue in exploratory research on hazards in the workplace.

Only tentative theoretical and empirical work was available to suggest an association between power and control and workplace health and safety (Conger & Kanungo, 1988; Draper, 1986; Dwyer, 1991; Grunberg, 1986; Guarasci, 1986; Navarro, 1980, 1982; Sass, 1986, 1989). But power relations had been linked to compliance, subordination, inequality, and dependence (Burawoy, 1979; R. Edwards, 1979; T. Johnson, 1980; G. Morgan, 1986; Perrow, 1986; Ritzer & Walczak, 1986). As well, control over access to individuals, physical plant facilities, and information was found to contribute to dependencies (Krause, 1977; Mechanic, 1962; Pfeffer, 1981; Krackhardt, 1990). Moreover, power relations among organizational subunits reflected differential accessibility to structural and material resources (Hickson et al., 1971; Hinings et al., 1974; Ranson, Hinings, & Greenwood, 1980; Salancik & Pfeffer, 1974). These issues of inequality and inaccessibility link with the feminist perspective discussed below.

On a theoretical level, Clegg (1989) used the metaphor of a circuit diagram to link power relations inside an organization with power sources in the organizational environment. Three circuits of power encounter external and internal influences on organizational performance or effectiveness. The circuit of system integration (facilitative power) is technologically based and disciplined. A dynamic circuit, it contrasts with the stability of the circuit of social integration (dispositional power) which establishes relations of membership and meaning. The most visible circuit is agency (episodic power). Clegg amplifies the notion of agency to include organizations, among others, and argues that agency reproduces the status quo by taking advantage of division, isolation, lack of knowledge, or compliance-inducing conditions. Both theoretical and empirical research suggested therefore that issues of power and control would likely arise during data collection and analysis.

The selection of a constituent subunit may passively or inadvertently challenge power relations and counterposing interests inside the organization. While it offers visibility and credibility to subunit interests (the topic must be important to subjects), it essentially implicates the researcher in a political manoeuvre (Cameron & Whetten, 1983b). Nonetheless, for manageability one subunit was selected in this exploratory research.

A final point favouring the use of the functionalist paradigm for this research is related to the quality-of-work-life literature encompassed within the paradigm. Quality of work life is considered to be a functional imperative of organizations (Burrell & Morgan, 1979). By extension, a work life with reduced hazards might be considered a functional imperative and an indicator of organizational effectiveness or performance. Just as metaphors of organizations create new perspectives on organizational phenomena (G. Morgan, 1986), the reconceptualization of work hazards provides guiding concepts for reviewing the substantive literature more critically, developing the research instruments for an exploratory approach, and probing for organizational factors in interviews. Clearly, identification of the organizational phenomena during data collection firmly grounds the categories and concepts emerging from conceptualization of the raw data in the organizational context.

Guiding Concepts and Theoretical Influences

The reconceptualization focusses on established organizational characteristics as a common language and basis for comparison, informed by open systems theory, contingency theory, and interactionism. Daft (1989) presents key structural and contextual dimensions of organizations that describe their internal characteristics and settings. Fundamental to an understanding and comparison of organizations, the dimensions reflect research in the objectivist tradition of the functionalist paradigm. For example, Blau (1963) studied social interaction in two government employment agencies to reveal the dynamic nature of bureaucratic structure and the functional and dysfunctional effects of internal and external forces on bureaucratic social patterns. Pugh, Hickson, Hinings, and Turner (1968) defined, operationalized, and tested five primary structural dimensions (centralization, configuration, formalization, specialization, and standardization) in 52 diverse work organizations, concluding that organizations vary along structural dimensions and that bureaucracy is multidimensional. Research by Pugh and Hickson (1976) and Hall (1972) introduced size, technology, environment, and configuration to the typology of dimensions. Organizational goals were another dimension (Cameron & Whetten, 1983a; Friedlander & Pickle, 1968; Pennings & Goodman, 1977; Weick, 1977). Predating all these contributions to knowledge of organizations was Weber's ideal type of bureaucracy (Coser, 1977; Gerth & Mills, 1946). Building on this tradition, Daft (1989) describes eight structural dimensions: formalization, specialization, standardization, hierarchy of authority, complexity, centralization, professionalism, and personnel ratios. These are interdependent with four contextual dimensions: goals and strategy, technology, environment, and size.

These organizational concepts were fundamental to the operationalization of the research questions. First, each dimension was considered in relation to work hazards and the review of the literature. The Canadian, international, and related studies were all reviewed for organizational dimensions implicated in work hazards. The results of the review are discussed in the second major section of this chapter. Second, the dimensions were incorporated into the research instruments. As an illustration, the formalization of health and safety policies, specialization of CHNs in occupational health, standardization of procedures (e.g., handling of needles and syringes), and level of education (professionalism) were obtained by questionnaire. Information regarding personnel ratios, centralization, complexity, and hierarchy of authority was obtained principally by interview. This is discussed more fully in Chapter Three. Third, these guiding concepts influenced the nature and direction of interview questions, also described in Chapter Three.

Undergirding the use of the structural and contextual dimensions of organizations were two theoretical influences: systems theory and contingency theory (Buckley, 1967; Collins, 1988; Hickson et al., 1971; Lawrence & Lorsh, 1967; Molnar & Rogers, 1976; von Bertalanffy cited in Burrell & Morgan, 1979 and Collins, 1988). Drawing upon the open system model, it was assumed in this research that all organizations would interact with their environments and be affected by them. An open systems approach would identify pressures and counterpressures with respect to scarce and valued resources (e.g., funding, services, products). Further, it was expected that the organizations would exhibit a diversity of structures and contexts as well as varied work hazards for CHNs, although each individual organization was assumed to be relatively stable in terms of the existence of work hazards (principle of homeostasis). Systems theory would have to answer the question: "What characteristics of organizations facilitate or inhibit the identification and elimination of work hazards?" Or in other words, "What characteristics contribute to organizational effectiveness with respect to the identification and elimination of work hazards?"

Critics of systems theory argue that it produces no more than a description of the status quo, without predictive or explanatory power. While description was a necessary component of this research, it was contingency theory, introduced by Woodward (cited in Lee, Luthans, & Olson, 1982), Lawrence and Lorsch (1967), and developed further by Pugh at al. (1968), Pugh, Hickson, Hinings, & Turner (1969), Hickson et al. (1971), and Hinings et al. (1974), that enhanced the exploration of organizational factors underlying the existence of CHNs' work hazards. Lawrence and Lorsch investigated organizational differentiation and integration by studying interdepartmental relations, formality of structure, and managerial orientation towards goals, time, and interpersonal relations, within the context of external organizational conditions. Briefly, they studied how external conditions or contingencies constrained and enhanced the effectiveness of internal structures, although from a managerial perspective. Subsequent researchers determined more specific contingencies among structural and contextual variables which affected organizational effectiveness. Some of these contingencies include: location, personnel ratios, ownership, and control (Pugh et al., 1969); subunit centrality, nonsubstitutability, and coping with uncertainty (Hinings et al., 1974); size (Blau, 1970); technology (Perrow, 1984); corporate culture (Denison, 1990); institutionalization (Zucker, 1987); political processes and power dependencies (Ranson et al., 1980). The diversity of the identified contingencies only underlined the imperative for exploratory research to answer the question, "Contingent on what?" Both theoretically and methodologically, contingency theory had implications for this research.

A Microsociological Perspective

While the macrosociological approach identified the scope and nature of social structures to be explored, the perspective was limited by a nonreflective epistemology. A structural approach ignored workplace social relations, and employees' perceptions and interpretations. The tensions and contradictions associated with work hazards were more likely to be exposed if the strengths of the micro and macrosociological perspectives were combined. The integration of metatheoretically disparate perspectives promised a more accurate analysis.

It is the employee who experiences the social structure as well as the pressures and influences of the environment (Pennings & Goodman, 1977; Seashore, 1977). To review earlier arguments, employee safety and health have been linked to vested interests (Walsh, 1988), conflictual social relations (James, 1987), and organizational structure and context (Conrad, 1987; Gephart, 1987, 1988, 1989; Karasek & Theorell, 1990; L.S. Levin, 1987; Mohr, 1971). When the focus is the work environment, employees must be the subjects of research because they have direct knowledge of the environment and its technology and they experience workplace exposures. When the focus is the work environment of a female-dominated profession, a feminist perspective permits examination of women's equal access to resources for the recognition, evaluation, and control of work hazards. Unlike the applied social psychological approach in the lifestyle (individualistic) paradigm of the occupational health field, a microinterpretive approach collected women's perceptions of the social structures. That is, instead of a focus on the personality, motivations, and physical characteristics of these employed women, the research incorporated their perceptions of the organization's characteristics. Organizational dimensions "describe organizations much the same way that personality and physical traits describe people" (Daft, 1989, p. 17).

An Interactionist Perspective

Individuals' knowledge of their own occupation and the world in which it is situated is specific and rich, but they respond to *perceptions* of their world, not objective facts (Berger & Luckman, 1967; Hinkin & Schriesheim, 1988). Knowing their world only through their reflective and intersubjective experience, individuals try to make sense of their situation and take action accordingly (Prus, 1990). The readings that different individuals have of situations or circumstances are therefore critical. "If men [sic] define situations as real, they are real in their consequences" (Thomas & Thomas, 1928, p. 572). For Thomas and Thomas, it was not important that perceptions be accurate, only that the definition of the situation be taken into consideration because it determines subsequent action. Perceptions of the opportunities and the threats in the environment determine the action taken (Kimberly, 1987).

Researchers require knowledge of individuals' perceptions and understandings in order to discover important factors in the area under scrutiny (Goldenberg, 1987). Since subjects tend to do what is relevant for them (Nyhlin, 1990), the object of investigation becomes their understanding of the situation within their frame of reference (Clarke, 1990; Nyhlin, 1990). Although these definitions of the situation may not be accurate in an objective sense, they are essential to a grounded, context-sensitive understanding of reality (Prus, 1990). Actors in organizations create "provinces of meaning" that include interpretive schemes for orientating themselves and developing strategies (Ranson et al., 1980). When the basic social processes or structures of phenomena are poorly understood, interpretations by researchers require grounding in the actors' experiences.

In organizations, it is the everyday life experiences that an employee interprets for subsequent action (Gephart, 1987; Krackhardt, 1990). An employee's perception creates reality for that individual and has consequences for the effectiveness of the organization (Kinlaw, 1988). "What employees 'see' influences what the organization 'gets'" (p. 39). As a consequence, it is more important to know what individuals think is happening than what actually is happening (Kinlaw, 1988, J. Wilson, 1983).

Since perceptions vary, an organization will represent various interpretations, values, and interests at any one time (Ranson et al., 1980). Perceptions reflect the social distribution of knowledge acquired according to its relevance for day-to-day life (Berger & Luckman, 1967). Data collected from organizational actors are therefore perceptions of a "supposed reality" (Hinings et al., 1974, p. 24), but nevertheless, perceptions on which social action is based. "To indicate anything, human beings must see it from their perspective. They must depict it as it appears to them" (p. 22). For W.I. Thomas that included both natural and social worlds (J. Wilson, 1983). Consequently, perceptions were sought from subjects for both the physical and psychosocial work environments in this study.

A Feminist Perspective

The interactionist approach is congruent with a feminist perspective (Stacey & Thorne, 1985). Since the organizational actors in community health are mostly women, this research took a feminist perspective, although it must be recognized that MacPherson (1983) distinguishes between research on women and feminist research. By excluding the private sphere of women's lives, or rather the multiple-role conflict (Kaufman, 1989), the research actually deviated from mainstream feminism which would have located professional women's multiple role experiences in the broad context of social organizational and ideological structures (Anderson & Lynam, 1987). This would have required a historical-comparative approach as well as a discussion of capitalist, professional, and patriarchal ideologies. Insofar as power relations and ideologies emerged during the analysis of subjects' understanding of their hazards in the work environment, the study drew upon and contributed to the feminist perspective in sociology and was not simply research about women (MacPherson, 1983).

The female-centred perspective that was taken was most reflective of liberal feminism which focusses on women's equal access to opportunities already available to men in society (McLaren, 1988; Saunders, 1982). As an example, most occupational health research has been conducted on men, a pattern established with the highly visible and dangerous occupations of mining, forestry, and construction, for instance, and established before the influx of women into the paid labour force. Because of job segregation, women may be exposed to different work hazards than men (Haw, 1982), and these also require investigation and evaluation. In the underexplored territory of work hazards in the female-dominated health care industry (Coleman & Dickinson, 1984; Carter-deCarteret, 1987), in particular the hazards of community-based health professionals, the microinterpretive and feminist perspectives provide a mechanism for discovering factors which limit women's access to opportunities for workplace health and safety. By combining the micro and macrosociological approaches in this research, a new perspective on women's work hazards was obtained. In the next section the review of the literature using the theoretical orientation reveals the neglect of CHN work hazards and introduces the connectedness of organizations with work hazards.

Substantive Focus

The theoretical orientation in the first section of this chapter provided the guiding concepts for this review of the substantive literature on the work hazards of community health nurses (CHNs). As might be expected with a professional discipline, the majority of the theoretical and empirical publications concentrated on community health nursing practice and education, if not on human resources or broad worklife issues. The first part of this section on the substantive literature reviews the published Canadian studies and presents a focussed review of international studies. The second part supplements the review of work hazards for CHNs by drawing upon relevant literature on hospital-based nurses. The review revealed few published articles on hazards and their organizational determinants in the work environments of CHNs and underlined the need for an exploratory study using grounded theory.

Community Health Nurse Research

The literature review in this section is divided into three subsections. Contrary to the practice in other Canadian jurisdictions, Alberta health units are autonomous. Accordingly, the review begins with Alberta studies, continues with other provincial studies, and concludes with a selected review of international studies.

Alberta Studies

Most Alberta studies focussed on nursing practice issues and demographic characteristics. While not directly related to this research, they provided insights and comparative data. The first study to be reviewed contributes the most relevant information for the purposes of this research.

Alberta Health (1991c) responded to a request by community-based nurses and surveyed community health, occupational health, home care, and community mental health nurses on their satisfaction with worklife issues. Included among the sample of 707 randomly selected respondents were 291 CHNs in staff and managerial positions. Results for the mail questionnaire represented an average response rate of 66%. The study contributes relevant information in four ways: (1) 4 out of 76 questions were about occupational health and safety,[5] (2) contextual factors (government and administration) were considered, (3) CHN responses were compared with those of the other community-based nurses, and (4) current demographic data on CHNs were obtained.

Although the few questions on work hazards included only psychosocial and safety hazards, primarily within the context of perceived employer concern, 36% of respondents indicated that they were somewhat or very dissatisfied with occupational health and safety, and 32% were just as dissatisfied with workload. Work hazards were the second most important dissatisfier next to "resolution of issues" (for which 59% were dissatisfied). Respondents were either somewhat or very dissatisfied with both government and employer efforts to resolve issues related to staffing and working conditions. They were also dissatisfied with employers' efforts to deal with educational issues.

Results for CHNs were statistically significant ($p=.05$) for (1) occupational health and safety, (2) communication, and (3) resolution of issues when compared with the other three groups of community-based nurses. In general, CHNs and mental health nurses were more dissatisfied. In all but one of the 10 major categories, CHNs were more dissatisfied than at least one or more of the other groups. Although the mean raw score differences between groups were less than 0.5 on a 1 to 5 point scale in 9 of the 10 major categories, the difference between the means reached 0.76 for CHNs in comparison with occupational health nurses on occupational health and safety issues, the tenth category.

Demographically, 49% of the CHNs worked in Edmonton or Calgary, 21% in the north, 16% in the central region and 12% in the south of the province. Eighty percent of the 291 CHNs were staff nurses and 12% were clearly managerial. Just over one-half (50.5%) were 40 years of age or less. Seventy-one percent worked full-time, 25% part-time. Close to two-thirds (62%) had dependents at home. Twelve percent were currently enrolled in an educational program. Of the 60% who reported working overtime, 72% were not compensated. Seventy percent had 10 years or less experience as CHNs, 29% had 11 or more years. With respect to education, 50% had a baccalaureate degree, 13% a post-basic certificate, and 37% an RN diploma. Finally, 49% earned between $30,000 - 39,999, 28% earned less, and 22% earned more.

By contrast, Moore's 1977 baseline demographic data for 391 CHNs (92% of the CHN population in all health units except one of the two largest) indicated that 62% of CHNs were 40 years of age or younger, 67% were married, and 15% worked part-time. Forty-seven percent had a baccalaureate degree in nursing and 24% had 11 years or more of CHN experience. In short, over a 14-year period, the CHN population in Alberta appears to have become older on average, more experienced, and composed of a somewhat smaller full-time contingent, although the two study samples are not exactly comparable. These findings may have relevance for hazard awareness and cumulative trauma from exposure over time; they suggest the importance of collecting further demographic data for the purpose of defining trends.

Moore's research, despite being a CHN human resource and program study that did not address work hazards or organizational factors, provided useful baseline information for current comparative purposes. For example, respondents cited paperwork as the most frequent source of dissatisfaction. Fourteen years later, 51% of the surveyed CHNs were somewhat or very dissatisfied with paperwork (Alberta Health, 1991c). Moore also observed that CHNs were convinced of their crucial role in future health care delivery, citing a belief in preventive services as one of their major reasons for choosing the public health field. Yet a finding that deserves particular attention is that *not one* CHN reported expertise in occupational health at that time. Furthermore, respondents did not include occupational or environmental hazard surveillance as necessary programs in CHN practice. Given current federal and provincial directives for health care agencies to be models of healthy work environments (Epp, 1986; Health and Welfare Canada, 1990; Premier's Commission on Future Health Care for Albertans, 1989; World Health Organization, Health and Welfare Canada, & Canadian Public Health Association, 1986), contemporary research should document current levels of preparation in occupational health as well as the nature of the hazards in the work environments of community health practitioners.

Predating Moore's research, Ebert and MacAlister (1970) replicated a 1965 Ontario study (not reported here) of the daily activities of CHNs in 11 health units, including one of the two largest. Alberta staff and managerial CHNs (*n*=160) recorded their activities for five consecutive days in the spring of 1968 and records were analyzed for type of activity and time expended. Of particular interest for this study are the results comparing the large city health unit with the other ten. They highlighted similarities and differences among health units and provided a useful comparison of urban and rural CHNs, but not seasonal variations in CHN activities. Among staff CHNs, all personnel spent approximately 19% of their time doing recording and clerical activities, but only 7% of CHN time in the major city health unit, compared with 17% for the other health units, was spent in travel. As a result, time for providing services and performing administrative tasks was 60% and 50%, respectively, of the total. On average, CHNs spent 39% of their time in direct service, 43% in indirect, service-related activities. This provides a baseline for interpreting data for hazards related to direct and indirect services.

Two Alberta studies focussed strictly on managerial CHNs. Tenove (1981) dealt with professionalism, a structural dimension of organizations, when she surveyed the most senior CHN in 24 health units. Based on her data for selection criteria and procedures, Tenove concluded that practices for staff CHN selection were not consistent across health units. This suggests that information on the education and experience of the subjects in this current study might be important for understanding study results across autonomous health units.

P.M. Morrison (1983) considered the structural determinants of power and the influence of contextual dimensions (size, technology, and environment) in her participant observation of four CHN managers over a total period of 12 days. Her respondents were randomly selected from among those who met her selection criteria after she had eliminated the two largest and two smallest health units. Although she did not address work hazards, her analysis provides background information on the nature of managerial CHN activities and potential work hazards. By providing insights on managerial activities, Morrison's research could be used as a partial check of the questionnaire for capturing managerial work hazards. Moreover, it suggests a need for a close analysis of the organizational context and structure of managerial work. Managers spent significant amounts of time in interpersonal professional activities, especially in the leadership roles, and experienced conflict between their administrative and professional responsibilities. The seasonal as opposed to daily or weekly patterns of activities, the shortage of support staff for managerial activities, and the days packed with activities of short duration also provide insights for an investigation of managerial work hazards. The frequent changes of activity, interactions with internal and external participants in the organization (a 2/3:1/3 ratio respectively), and subjection to the style and expectations of the medical officer of health suggest potential work hazards.

The final three Alberta studies all investigated staff CHNs. Focussing on one particular aspect of CHN practice, entry into the client system, Birk (1988) inductively analyzed the data collected by interview with 9 volunteer staff CHNs and their clients in Edmonton. A potential hazard for CHNs is the long established practice of initiating service independent of any client request. Birk noted that the initial encounter, when CHNs must convey the value of their service, has been under-researched. While Birk described and conceptualized the types of CHN approaches to "entry" during outreach home visiting, her focus of inquiry was client-centred practice, not CHN safety. Birk's research and the following two studies further highlight the absence of occupational health and safety research among CHNs.

In contrast to Birk, Hoskin (1987) used questionnaires and interviews to study the subjective well-being and lifestyle practices of 59 nurses randomly selected from a political jurisdiction of the Alberta Association of Registered Nurses in southwest Alberta. Twelve (20%) were CHNs. Several self-care practices had relevance for biological, ergonomic, safety, and psychosocial hazards at work, although they were not investigated from that perspective. For example, Hoskin documented that 60% reported using seatbelts most or all of the time and only 12% stated they participated in vigorous physical activity or sports three or more times per week. Further, 29% had never received rubella immunization, 48% had not received hepatitis B vaccine, and 17% never had BCG vaccine for tuberculosis. Without a breakdown of responses per type of nurse no association of the results can be made for CHNs, but they do provide data for comparative purposes.

Hoskin subsequently interviewed 10 of her respondents who reported work overload and excessive paperwork as stressors. Moreover, they identified a lack of structure in the workplace for promoting self-care. Between women's work and nurses' work, respondents considered that there was little time and energy left for self-care.

Field's (1980) ethnography of four staff CHNs analyzed the conceptual models used by each one in her clinical practice. Although Field's research also did not focus on work hazards, it did recognize the contextual variables that influence CHN perspectives on nursing. Specifically, Field observed that perceptions of agency policies and guidelines, climate of the organizational subunit, interactions with other agencies, and the time available for clients all influenced those perspectives. She concluded that each CHN used an individual definition of the situation as a conceptual framework in her clinical practice. These findings provide some support for an individual unit of analysis in the definition of work hazards and the examination of organizational factors.

To summarize, work hazards of CHNs in Alberta have been almost entirely ignored. Only the general categories of safety and psychosocial hazards have even been considered. Changing demographics suggest potential consequences for hazard awareness and exposures and organizational factors have been shown to have relevance for nursing practice. What still need to be identified are the nature and extent of work hazards among CHNs, the organizational factors associated with exposure to hazards, and the current expertise of CHNs in occupational health.

Other Canadian Studies

By extending the review to other Canadian jurisdictions, the inadequacy of current Canadian research on CHNs' work hazards was re-emphasized. Few published studies were discovered.

In British Columbia, Clarke, Beddome and Whyte (1990) used a two-phase Delphi technique to identify and prioritize critical issues for public health nursing. It is worth noting that work conditions were not included in the first questionnaire, but respondents added them as an issue. In the second questionnaire, selection by 33% of the respondents placed work conditions tenth in the list of priorities. The term included salary, benefits, flexible work hours, and educational leave, but also identified care for the employee. The most frequently indicated priority was funding for preventive services, and occupational health and safety was not specified. The sample was drawn from the entire membership (137 CHNs) of the provincial Community Health Nursing Interest Group and another 137 randomly selected nonmember CHNs. Response rates were under 48% for both phases (n=121 and n=108 respectively), subjecting the representativeness of the sample to question. Furthermore, only 81% of the CHNs provided strictly preventive programs (i.e., population-based). Results were confounded by a number of CHNs who also provided direct nursing services (e.g., home care) in an individually based model of episodic illness treatment. Demographic characteristics of the 108 CHNs provided evidence that both staff (75%) and managerial CHNs were included and that CHNs with urban (61%), rural (35%) and mixed urban-rural practice were represented. Contextual factors were made apparent when Clarke and her colleagues articulated their conceptual framework. In their concept of shared governance, they recognized the importance of public relations, coordination with other health professions, policy formulation, and Boards of Health. In their concept of health care, they included improved working conditions, intersectoral collaboration, and resource allocation.

A 1981 survey by the Registered Nurses Association of Ontario (RNAO) identified salary ranges, vacation allotments, and educational activities for managerial nurses, but ignored hazards in the environment. This cannot be explained by the professional ideology of caring because it deals with nurses' salaries and benefits. Nor can it be explained as a period of reduced interest in Ontario in occupational health and safety. In the 1970s, progressive legislation had been developed for most provinces, including Ontario. It may reflect the focus in occupational health on workers in the goods-producing sector or social comparison by administrators who perceived their positions as more favourable (i.e., less hazardous) than hospital-based positions. Finally, the focus of the survey may reflect elitism within the ranks of the professional association. The mail questionnaire returned by 572 registered nurses (including 102 CHNs) in first-line management and chief executive positions concentrated on managerial functions and use of time.

Early in the same decade, a management study was conducted by a consulting firm for the North York Department of Public Health in Ontario (1984). The nursing subunit employed 10 managerial and 105 staff CHNs and school health assistants. Of particular interest because of the methods used, the study also identified one hazard in the physical and psychosocial work environments, although it had no mandate to examine work hazards. Noise in the office environment was singled out in the recommendations of the report.

The principal intent of the study was to streamline operations. Researchers interviewed external constituents (e.g., school personnel, elected officers, Ministry of Health personnel) and examined documents (e.g., annual reports, board minutes, workload statistics, policy manuals), but failed to interview internal constituents and made recommendations that interfered with professionals' self-determination of their practice. On the one hand, the methodology failed to reflect reality as perceived by the North York CHNs and imposed recommendations without considerations of their viewpoint. On the other hand, the methodology emphasized the structural and contextual factors of the organization that influenced professional practice. Among the structural features examined were personnel ratios, professionalism, specialization, centralization, hierarchy of authority, and level of complexity. All contextual factors (i.e., size, technology, environment, and goals) were considered, although only official goals were subjected to scrutiny. After comparing the broad official CHN goals with the goals of the Ministry of Health, researchers recommended marked changes in CHN practice. Further, they observed that neither City Council nor Board of Health members were cognizant of the nature of CHN practice and recommended that both bodies take a more decisive role in policy-making for community health nursing. The study provides an example of the breadth of influences and constraints on bureaucratized professionals and contributes insights on the organizational factors to be included in this study's questionnaire and interview guide. More important, its failure to incorporate the perspective of employees raises the issue of respect and value for workers' contributions and illuminates the neglect of the organization to ensure employee participation in the study. It also raises some questions: "What does the commission by management of an outside study on internal operations without employee input indicate to workers in the organization? Does this become another stressor for employees? What implications does this have for the current study?" I considered these questions for sampling, data collection, and data analysis and return to the issues in Chapter Six.

The last Canadian study reviewed was a research project in Nova Scotia that compared stressors and stress levels for two types of nurses. A mail questionnaire was used to survey 56 female urban and rural CHNs and 48 female hospital-based nurses in critical and noncritical care units (Haché-Faulkner & MacKay, 1985). Respondents completed a state (as opposed to trait) anxiety scale, described three stressful events, and provided demographic information. Quantitatively, no statistically significant differences on situational stress scores were found. Compared with a female college population, the scores were considered to be within a "normal range" (p. 42), even though a subgroup of CHNs had scores approaching those of students writing examinations. Neither education nor nursing experience modified perceptions of stress. Qualitatively, when stressors were classified according to a pre-established category system, similarities and differences became apparent. Nurses in both public health and hospital settings identified administrative, interpersonal, and client/patient-based stressors. Community health nurses identified heavy workload and staff shortages most frequently as stressors. The researchers recommended structural and contextual solutions (e.g., use of relief and auxiliary personnel, re-evaluation of programs, teamwork), but without subjects' perceptions on solutions.

While this research sought subjective perceptions on stressors, it coded stressors according to a predetermined schema despite the dearth of studies on CHN stressors. Moreover, it made recommendations that were organizationally oriented without the input of the affected employees.

To summarize the contribution of these four studies, six CHN hazards have been identified: noise in the office environment; heavy workloads; staff shortages; client stressors; administrative stressors; and the more general "interpersonal" stressors. In addition, the relevance of organizational factors (i.e., structural and contextual dimensions) for nursing practice and identified psychosocial hazards has been documented. What remains to be identified are the work hazards according to the well-established typology of hazards in the occupational health field, the organizational factors associated with all CHN work hazards, and CHN preparation in occupational health.

Although limited by the availability of research, the review to this point has raised methodological issues. Despite the paucity of literature on CHN work hazards, CHNs have been surveyed. In spite of a well-established typology of work hazards, researchers have only included safety and psychosocial hazards in their surveys. When they have sought qualitative information on psychosocial hazards, they have coded the data according to a predetermined schema. Organizationally oriented recommendations for nursing practice have been made without CHN input. When so little is known about a phenomenon, exploratory rather than verificational research is required. In short, substantively and methodologically, the Canadian research has many shortcomings. International studies on the work hazards of CHNs augment this limited Canadian knowledge.

International Studies

British and American literature offered additional insights into CHN work hazards and the organizational factors associated with them. While prescriptive literature on British health visitors (the equivalent of CHNs) discussed their workloads (I. Morrison, 1984), inner-city stressors (Davison, 1987), risk of physical attack (Orr, 1988), hierarchical structure, and overcrowded offices (Goodwin, 1983, 1987), West, Jones, and Savage (1988) and West and Savage (1988a, b) reported different aspects of empirical research on health visitors in a number of articles. Their research expanded the very limited results on psychosocial hazards in the Canadian literature.

Qualitative and quantitative data were reported for a study of stress and satisfaction among staff health visitors in two areas of Britain (West et al., 1988; West & Savage, 1988a, b). First, a mail questionnaire that was developed using established instruments was distributed to two geographical areas. One hundred and forty-five questionnaires were returned, representing response rates of 93% and

65%. The researchers identified a contradiction between two models of care: (1) health visitors' care for the client, and (2) management's care for the health visitor. They concluded that health visitors in both areas were working under significant pressures and that organizational structures were among the contentious issues. West (1989) describes problems with staffing levels, clerical assistance, and the hierarchy of authority.

Second, diaries were sent to the 92 health visitors who had returned questionnaires from one of the areas, with the request that they record 15 working days. Content analysis of the stressors in the 55 diaries that were submitted revealed 12 major categories, which were quantified. In order of decreasing frequency, the stressors include difficult cases (e.g., hostile client), intrinsic difficulties (e.g., entry, busy clinics), administrative difficulties (e.g., clerical), professional relationships (e.g., liaison), extra work (e.g., coverage for colleagues), and overwork. Other stressors represented in 5% or less of the entries included extrinsic difficulties (e.g., dogs, weather), contacts with management (e.g., lack of contact), and career development (e.g., job security). Four percent of all entries presented no stressors.

Although the researchers suggested that diaries might provide the most accurate assessment of stressors, they also analyzed 86 accounts of stressful events in the previous 30 days. Those categories corroborated the stressors of friction with colleagues and other professionals; difficult cases; angry, aggressive, or violent clients; and overwork among health visitors. An average of 3.4 hours overtime per week was reported by 85% of the sample.

West and Savage (1988b) observed the *chronicity* of many stressors, as contrasted with episodic or discrete stressors, and their exacerbation by the disproportionate ratio of 35 staff to one supervisor. Using a predetermined list of eight strategies, they collected data on respondents' coping methods. All prescribed strategies, however, were individually oriented and provided no avenues for organizationally directed activities. Nonetheless, the researchers recommended that technological and structural changes be made. At the same time, they recommended that the time and stress management skills of health visitors be developed. Worth noting is the fact that health visitor safety remained outside of the discussion, in spite of the reported behaviour of clients.

Although health visiting requires that health professionals actively seek access to clients, and despite the fact that entry into the client system was a central theme for 30% of respondents, Luker and Chalmers (1990) did not detect concern for health visitor safety. They conducted semi-structured interviews with a convenience sample of 45 experienced health visitors for the purpose of describing respondents' conceptualization of everyday practice. It would appear that concern for safety was not articulated by respondents. This may reflect the professional ideology of caring, the client population, a social desirability bias, the nature of the questioning, or precautions taken by health visitors and their organizations to reduce risk.

Like West and Savage, Cohen (1990) also studied occupational stressors, coping, and psychological well-being, but in managerial CHNs. Cohen targeted directors of nursing in all 50 county public health agencies in California using a descriptive correlational design. Eighty-six percent completed questionnaires and 49% were interviewed. The top five occupational stressors in descending frequency were: lack of funding and work overload, understaffing, role conflict and ambiguity, personnel problems, and the environment. The extent to which the environment as stressor referred to work hazards in the physical environment was not defined by Cohen. The remaining stressors included political issues, lack of power, ethical concerns, relationship with superiors, regulation, and communication. Structural and contextual factors are both reflected in the identified psychosocial stressors, but Cohen took a social psychological perspective and coded subjects' described coping strategies. One strategy that Cohen found, planned problem solving, has potential for a social structural approach, but individual and collective action as well as participatory decision making were mentioned only briefly.

When reviewing the literature, Lucas, McCreight, Watkins, and Long (1988) found just three studies related to CHNs and job satisfaction and no study that related organizational and individual factors of CHNs to job satisfaction. They surveyed the total population of CHNs in the state of South Carolina. The sample of 741 represented 68% of the population, including 19 licensed practical nurses and five who failed to specify their professional status. Working conditions (not defined) ranked ninth among contributors to job satisfaction. Managerial CHNs had significantly higher job satisfaction than staff CHNs, and the 374 CHNs (47%) who took work home to complete had significantly lower job satisfaction than those who left work at the office. This report informs that individuals with authority in the state public health system made *structural* changes (e.g., reduced paperwork, upgraded positions) after the study and did not attempt to focus on individual employee characteristics. In other words, within the hierarchy of authority, there was recognition, acknowledgement, and action on the organizational origins of CHN work hazards.

In sum, the international studies corroborate that limited research has been published on organizational factors and work hazards in community health nursing. At the same time, these studies only further emphasize the lack of a comprehensive assessment of CHNs' work hazards because of their focus on stressors (psychosocial hazards). Additionally, researchers continued to take an individually based approach when defining coping strategies, in spite of links in their findings between hazards and organizational factors. When such factors were recognized, researchers made recommendations without employee input on organizational functioning or on the nature and implications of the strategies. While their objective might have been to promote change in the workplace, they neglected the importance for employees of participative decision-making. The ground-breaking research by Karasek (1979, 1990) and Karasek and Theorell (1990) has demonstrated how vital the concepts of discretionary use of skills and authority over decision making are in the psychosocial work environment.

Similar to the Canadian studies, those studies reported the use of survey techniques, but unlike the Canadian research, these researchers incorporated exploratory methods (interview, diary analysis, event analysis). Although the international studies identified more stressors for inclusion in the category of psychosocial hazard in the questionnaire, they failed to address the remaining categories of hazards and stopped far short of an organizational analysis.

Summary and Conclusions

No Canadian or international study focussed on biological, chemical, ergonomic, or reproductive hazards. Safety was identified once when Alberta Health (1991c) indicated respondents' dissatisfaction with safety issues deriving from travel, parking, client violence, and the physical environment. Noise, a physical hazard, was also identified once (North York Department of Public Health, 1984). Essentially, psychosocial hazards (stressors) were the only category of work hazard addressed for CHNs (Alberta Health, 1991c; Cohen, 1990; Haché-Faulkner & MacKay, 1985; Hoskin, 1987; Moore, 1977; West et al., 1988; West & Savage, 1988b). It became necessary to examine related literature for indications of the biological, chemical, ergonomic, physical, reproductive, and safety hazards to which CHNs might be exposed. Commonalities among the services provided by community-based and hospital-based nurses suggested that a search of the literature on work hazards for nurses employed in hospitals might prove fruitful. Community and hospital nurses give injections (curative or preventive), are health educators (restorative or preventive), and provide screening services (for diagnosis or early detection). The discussion of that literature follows in the next section.

Taking a broader perspective on the review of the literature to this point, it became evident that the dominant theoretical perspective in the Canadian and international literature on CHN work hazards was social psychological in nature and strongly influenced by the biomedical model. Restricted by its metatheoretical assumptions, research in this tradition perpetuates the identification of work hazards as a problem of the individual and fails to recognize the significance of organizational factors that surface and are linked with work hazards. This approach is more likely to maintain the organizational status quo than to uncover the social structural foundations of hazards in the workplace. Moreover, by perpetuating the biomedical model, this perspective stresses behavioural and lifestyle factors for change at an individual, not organizational level (Terborg, 1988) in spite of organizational threats to health and safety that are beyond individual control (Janssens et al., 1989; Perrow, 1984; Sloan, 1987).

From a methodological perspective, the dominant approach used is survey research, although no studies have provided a comprehensive description of the work hazards of CHNs. Further, when exploratory methods such as interviews and documentary analysis are used, they are designed and analyzed from a social psychological perspective. In short, the dominant paradigm restricts a thorough examination of the context in which CHNs' work hazards occur. The failure to identify hazards in the physical domain of the work environment or make explicit the organizational factors associated with work hazards calls for a different approach.

Literature on Hospital Nurses

In this section I examine the literature on hazards in the physical work environments of hospital nurses in order to draw some conclusions about the specific hazards to which CHNs might be exposed and the organizational context of those hazards. In the absence of research indicating the relative importance of biological, chemical, ergonomic, physical, reproductive, and safety hazards, the categories are presented and discussed alphabetically. Each category of hazard is examined in detail because the purpose of this review is to identify and justify the hazards which should be included under each category on the CHN questionnaire. This makes the forced choices as comprehensive as possible and reduces unnecessary coding of open-ended questions.

Biological Hazards

The most widely recognized and common industry-specific hazards are biological (Coleman & Dickinson, 1984; Guidotti, 1987b; "Promoting Health", 1987; Rogers & Haynes, 1991; Triolo, 1989b; Zoloth & Stellman, 1987). Bacteria, viruses, and parasites are implicated in nosocomial (hospital-acquired) infections (Fleming, 1987). Universal precautions using gloves, gown, mask, and eye protection provide barriers to infection, but not to infectious human bites or needlesticks. In one study, 205 bites or scratches were recorded for a 12-month period (Astbury & Baxter, 1990). Of those, 91% were reported by nursing or auxiliary personnel on psychiatric or geriatric units. The most common route of infection could well be by needlestick, but it can only be conjecture because of under-reporting of injuries (Carter-deCarteret, 1987; Rogers & Haynes, 1991; Rowe & Giuffre, 1991; Stock, Gafni, & Bloch, 1990; Triolo, 1989b). Despite that, as an occupational group, registered nurses report the most needlestick injuries (Neuberger, Kammerdiener, & Wood, 1988). Also, needlesticks are the most common injury reported by all classifications of nursing personnel (Rowe & Giuffre, 1991; Wilkinson, 1987). Further, needlesticks transmit the hepatitis B virus (HBV), herpes simplex, human immunodeficiency virus (HIV), malaria, staphylococcus, streptococcus, syphilis, Rocky Mountain spotted fever, tetanus, and tuberculosis, among others (Astbury & Baxter, 1990; Brattebo, Wisborg, & Sjursen, 1990; Carter-deCarteret, 1987; Friedland, 1990; Goldstein & Johnson, 1991; Hoffmann, Weber, & Rutala, 1991; Rowe & Giuffre, 1991; Stock et al., 1990; Zoloth & Stellman, 1987).

Four of the most significant biohazards for hospital workers are HBV, HIV, the rubella virus, and the tubercle bacillus (Guidotti, 1987a). Tuberculosis continues to be a hazard for health care workers, although it has declined in the general population (Bailey & Coutu-Wakulczyk, 1991; Coleman & Dickinson, 1984; Fleming, 1987; Guidotti, 1987a; Lewy, 1987). In years past, morbidity and mortality among nurses or student nurses from tuberculosis was much higher (Coleman & Dickinson, 1984), but a tuberculosis infection remains a significant risk (Hoffmann et al., 1991). Bailey and Coutu-Wakulczyk's (1991) study of 51 health care facilities and schools of nursing in northeastern Ontario led the researchers to conclude that a small pool of infected individuals will continue to exist. They suggest that tuberculosis surveillance policies have not been modified to reflect current risks for employees and students. Similarly, Roger and Haynes's (1991) study of employee health services in 230 American hospitals documented that currently tuberculosis is the most frequently monitored infectious disease. Ninety-four percent of the hospitals with infection control programs conduct periodic surveillance of their employees. More important, tuberculosis has been associated with 5 - 10% of HIV-infected patients and poses a major risk because of its atypical presentation (Hoffmann et al., 1991). In tuberculosis-prevalent areas, the risk of conversions among hospital employees is 5% according to Ktsanes, Williams, & Boudreaux's (1986) study of a 1200-bed American hospital. In many hospitals, however, the cost of screening, the efficacy of screening, and decision-making over therapeutic regimens for converters all threaten the continuance of surveillance programs (Ktsanes et al., 1986).

The rubella virus is a threat to all women of childbearing age because of congenital defects, spontaneous abortions, or stillbirths that may follow exposure during pregnancy (Coleman & Dickinson, 1984; Guidotti, 1987a; Nelson & Sullivan-Bolyai, 1987; Zoloth & Stellman, 1987). In Rogers and Haynes's (1991) hospital study, immunity to rubella was monitored by 70% of the institutions. Earlier studies indicate even less effective programs to prevent nosocomial rubella infection (Nelson & Sullivan-Bolyai, 1987). Unless medically contraindicated, all health care personnel should have immunization against rubella due to the significant implications for the fetus

(Hoffmann et al., 1991). A preventive program must include male as well as female hospital employees in order to reduce viral transmission (Nelson & Sullivan-Bolyai, 1987).

The most publicized biological hazard is HIV, the virus responsible for AIDS. It is possible that the increased publicity on HIV in the past decade has contributed to a greater awareness of the hazards of HCWs among themselves and occupational health specialists. It is also possible that this narrow focus on HIV has been counterproductive and has directed attention away from the more common risk of infection by the hepatitis B virus and other hazards. In fact, Vlahov and Polk (1987, p. 429) consider the magnitude of concern among health care workers (HCWs) to be "exceptional". The data are suggestive of an overreaction. By 1989, only 18 cases of work-related HIV infection among HCWs had been reported worldwide (Centers for Disease Control, 1989). Nonetheless, the nature of their work exposes HCWs to inadvertent inoculation by HIV through three main routes: open wound exposure; mucous membrane splash; and percutaneous exposure by injury such as needlestick or scalpel cut (Elmslie, Mulligan, & O'Shaughnessy, 1989; Friedland, 1990; Vlahov & Polk, 1987). Yet studies show the risk of nosocomial HIV infection to be low, less than 1% (Beaufoy, 1989; Brattebo et al., 1990; Kuhls et al., 1987; Stock et al., 1990; Vlahov & Polk, 1987). Indeed, in a study of 1404 HCWs, no one seroconverted after contamination of mucous membrane or broken skin and 0.43% seroconverted after injury by needlestick or other sharp object (Hoffmann et al., 1991). Stock et al. (1990) aggregated the results from six prospective studies and concluded that the risk of seroconversion for HCWs after needlestick is 0.36%. The greater risk lies with percutaneous exposure, thus the most important occupational exposure is through inadvertent needlestick (Fleming, 1987). In a study of 59 needlestick injuries, Rowe and Giuffre (1991) found that 24% were related to recapping and 20% to disposal. In another study of 454 needlestick injuries, 25% occurred because of recapping needles and improper disposal, among other activities (Nelson, 1987). Friedland (1990) claims that 40% of needlesticks occur because of recapping. To prevent such injuries, needles should not be broken after use, removed from syringes, or recapped; disposal should be in puncture-resistant containers located close to the area where service is provided ("Leads", 1987).

Propitiously, the precautions used by HCWs to prevent an unlikely HIV infection are also effective for the higher risk of HBV infection among HCWs. Compared with a risk for HIV infection of 0.5%, Vlahov and Polk (1987) report a risk range between 6% and 30% following percutaneous exposure to HBV. It is the degree of contact with blood or tissues from infected patients that determines the risk (Nelson, 1987). Nursing staff are among the HCWs most exposed, a conclusion drawn by the presence of HBV serologic markers in studies of exposure (Nelson, 1987). "Frequent exposure to blood *and/or needles* have the highest risk of acquiring HBV infection" (p. 457, italics added). Understaffing only complicates the risk because of work pressures and the shortcuts taken (Coleman & Dickinson, 1984). Further, HBV is the most pervasive and common transmissible microorganism in the hospital setting (Carter-deCarteret, 1987). Yet, in Rogers and Haynes's (1991) study, under 65% of the hospitals reported surveillance programs for HBV among employees.

Effective vaccines for HBV are available (Goldstein & Johnson, 1991; Guidotti, 1987a; Hoffmann et al., 1991; Nelson, 1987). For the Occupational Safety and Health Administration (OSHA) in the United States, a standard that would require employers to provide HBV vaccine free of charge would include employees with potential exposures to blood or other infectious materials *"at least once a month"* (Goldstein & Johnson, 1991, p. 185, italics added). Professional bodies have developed similar guidelines (Hoffmann et al., 1991). Given that an estimated 12,000 HCWs in the United States become infected with HBV each year (for approximately 250 it will be fatal), preventive measures (e.g., universal precautions, HBV vaccine, post-exposure prophylaxis) are required (Hoffmann et al., 1991), and disposal units for syringes and needles should be readily available to prevent recapping (Triolo, 1989b).

Despite the recommendations, evidence suggests that HCWs resist HBV vaccination (Astbury & Baxter, 1990; Bodenheimer, Fulton, & Kramer, 1986; Fulton, Bodenheimer, & Kramer, 1986; Harris, 1986; Nelson, 1987). Furthermore, administrators make decisions based on *highest* risk when they offer the vaccines at no cost to employees (Nelson, 1987). For the foreseeable future, there can be no doubt that HBV infection will persist as a biological hazard among HCWs (Nelson, 1987).

In sum, this review of biological hazards identified biohazards that could be present in community health and raised issues for exploration. First, specific microorganisms (HBV, HIV, rubella, and

TBC) need to be addressed as well as the precautionary measures that are available (immunization, handling procedures, disposal units, personal protective equipment). Next, the level of concern among CHNs regarding the potential for HIV and HBV infection needs to be assessed. Third, the cost implications in organizational decision-making regarding protective measures require examination. Fourth, organizational policies regarding biohazards and needlestick injuries require identification and fifth, the issue of under-reporting of needlestick injuries must be considered. It is apparent with this review of the first category of hazard that organizational factors related to budget, purchasing, staffing levels, formalization, and standardization are inseparable from work hazards, yet the literature did not focus on this.

Chemical Hazards

Chemicals may produce acute or chronic effects and it is this characteristic that may hinder their recognition as hazards. Although chemicals used by HCWs may have acute effects that make them more identifiable, such as eye or skin irritation, headache, dizziness, nausea, nasal sores, and lightheadedness (Guidotti, 1987a; Rogers, 1986, 1987; Rogers & Emmett, 1987), their insidious long-term effects are less apparent (Triolo, 1989b). Fewer than 50% of the employee health services in the study of 230 hospitals monitor chemical substances in the work environment (Rogers & Haynes, 1991). Certainly, the effects of chemical hazards have been recognized ex post facto, but only in recent years (Guidotti, 1987a; Zoloth & Stellman, 1987). Among the identified hazards are detergents, disinfectants, carbon monoxide, tobacco smoke, antibiotics, antineoplastics (anti-cancer drugs), waste anaesthetic gases, mercury, and sterilants (Chenier, 1982; Cinelli & Glover, 1988; Coleman & Dickinson, 1984; Guidotti, 1987a; Rogers, 1987; Rogers & Haynes, 1991; M. Rosenberg, 1986; Triolo, 1989a, b; Zielhuis, Stijkel, Verberk, & van de Poel-Bot, 1984; Zoloth & Stellman, 1987).

Antineoplastics are used to reduce malignant tumours through a cytotoxic effect on rapidly proliferating neoplastic tissue, but the process of dispensing these drugs has been associated with carcinogenic, mutagenic, and teratogenic effects (Coleman & Dickinson, 1984; Rogers, 1987; Rogers & Emmett, 1987; Stevens, 1989). That is, they themselves are suspected of producing cancer, genetic mutations, and defects in the fetus. The drugs may be absorbed through skin and mucous membranes, inhalation, or ingestion (Guidotti, 1987a; Nordham, 1990; Rogers, 1987; Stevens, 1989), a fact which implies that organizational and individual responses are required in health care facilities. In order to protect HCWs, a biological safety cabinet with vertical laminar air flow, gloves, gowns, splash goggles, and proper disposal mechanisms for waste materials are recommended (McDiarmid, 1990; Rogers, 1986, 1987; Stevens, 1989). Clearly, not all protective measures will be available to HCWs providing direct services in homes or ambulatory settings (Greene, 1990; Stevens, 1989).

Ethylene oxide, which is used for cold gas sterilization in many hospitals, is a skin and respiratory irritant (Triolo, 1989b). It is also suspected of being carcinogenic, mutagenic, and teratogenic, causing leukemia, spontaneous abortion, or genetic damage (Guidotti, 1987a; Haney, Raymond, & Lewis, 1990; Hatch & Stein, 1986; Triolo, 1989b; Zenz, 1984; Zoloth & Stellman, 1987). Adequate ventilation, area and personal monitoring, and employee education are all necessary when using ethylene oxide (Guidotti, 1987a; Haney et al., 1990).

Additional substances used for related purposes also produce skin irritation. Cleaning solvents, preservatives (e.g., formalin), disinfectant bleach solution, hexachlorophene antiseptic, and iodine-based germicides may each cause irritant and/or allergic reactions (Chenier, 1982; Guidotti, 1987a). Personal protective equipment (i.e., gloves) and frequent hand-washing reduce the exposures (Guidotti, 1987a).

Lead is known to cause sterility, abortions, and stillbirths in female workers and decreased libido or impotence in male workers, but no studies were uncovered linking lead exposures to nurses in their work environments (Cunningham, 1986). Another metal, mercury, vaporizes from broken thermometers and blood pressure apparatuses to become a chemical indoor air contaminant along with bioeffluents from human beings, elements in tobacco smoke, carbon dioxide, and volatile organic compounds from new materials (Coleman & Dickinson, 1984; J. Crawford, 1991; Morey & Woods, 1987). Reduced air quality contributes to the discomfort if not frank illness of HCWs. External contaminants (e.g., carbon monoxide in motor vehicle exhaust) only add to problems of air quality (Morey & Woods, 1987).

Waste anaesthetic gases present significant reproductive risk, and are also implicated in liver and kidney disease of HCWs (Coleman & Dickinson, 1984; Guidotti, 1987a; Van Den Eeden & Wilkinson, 1985). Halothane, trichloroethylene, and nitrous oxide have all been associated with short-term headaches, depression, and irritability in HCWs.

Installation of anaesthetic scavenging devices by health care organizations effectively contains the risks (Coleman & Dickinson, 1984; Guidotti, 1987a).

In brief, the review of chemical hazards identified chemicals to be included in a checklist on the questionnaire, introduced the issue of sterilization procedures for supplies and equipment, and reinforced another issue, the availability of personal protective equipment and disposal mechanisms. Again, organizational factors were implicated but not well developed in the discussion. No authors referred to the availability of Material Safety Data Sheets (MSDSs) for the chemicals in use within the organization. Manufacturers provide vital health and safety information on MSDSs for many chemicals and MSDS availability predates relevant legislation by years. With the passage of legislation for the Workplace Hazard Management Information System (WHMIS) in 1989 in Alberta ("WHMIS II", 1990), employers were required to make MSDSs available to employees exposed to designated chemical hazards. This becomes an organizational issue for exploration in the interviews with CHNs.

Ergonomic Hazards

Perhaps the best indicator of ergonomic hazards among HCWs is the frequency of back and torso injuries (Guidotti, 1987b; Harber et al., 1988; Raniere, 1989; Triolo, 1989b). Ergonomic techniques have been used to assess the nature of ergonomic stressors for HCWs, which include repetitive activities as well as awkward body postures and poorly designed work areas (Raniere, 1989). The anatomical and physiological variations among HCWs contribute to injuries because of physical demands, nonadjustable equipment, and repetitive motions. An ergonomic approach would ensure that work systems are "tailored to human capacities and limitations" (Olishifski & Plog, 1988, p. 15), since ergonomics deal with the fit of the work system to the HCW. Lifting, static (isometric) work, and mechanical vibration all contribute to ergonomic hazards (Olishifski & Plog, 1988).

In Harber et al.'s study (1988), 68 registered nurses who participated in semi-structured interviews provided ergonomic data which were categorized as patient-oriented tasks (e.g., pulling up in bed, transfer activities) and movement of equipment or furniture (or other non-patient oriented tasks). Most subjects focussed on individual activities and work practices (e.g., seeking assistance), rather than on environmental change for reducing hazards. While concentrating on ergonomic hazards, the study serves to introduce the larger issue in the sociology of nursing practice which is practice characterized by strongly accepted beliefs. The authors suggest that nursing education emphasizes individual responsibility over the modification of the work environment. They argue in support of a more balanced approach that would include control over work demands. For Triolo (1989b), prevention of back injuries would include access to mechanical lifting equipment, adequate staffing, enough work space to permit a wide range of movement, evaluation of person-job fit, and inservice education.

Other studies suggested that handling equipment and supplies were more hazardous than direct bedside care. Coleman and Dickinson (1984) observed that back injuries from lifting patients were certainly the most costly in terms of time and money, but not the most frequent.

Agnew (1987), in recognizing the cost of HCW back injuries to the health care industry, concentrated on risk factors and preventive strategies. Risk factors included: patient handling; repetitive heavy lifting; prolonged sitting or standing; and movement of equipment. Although job redesign was recognized by Agnew as the strategy most endorsed for preventing back injuries, she acknowledged that desirable work conditions are not always available or realistic in the realm of nursing practice (e.g., mechanical lifting equipment necessitates the use of time and space and the cooperation of patients).

Activities related to direct patient care also include the use of video display terminals (VDTs) for documenting observations, checking diagnostic test results, and planning patient management. While the risk of radiation from VDTs is discussed below under physical hazards, poor ergonomic design is also relevant (Rogers, 1991). Monitors, keyboards, table heights, and chair heights all need to be adjustable to individual needs. If, however, computer stations are being used by a number of different individuals, it becomes impractical to make adjustments and the individual body instead adapts or, more accurately, maladapts. Simply controlling glare from windows or lighting and adjusting the work station may prevent visual and musculoskeletal strain (Donoghue, 1983; Jackson, 1991). Ergonomic modifications for personnel who use VDTs include attention to physical work conditions such as optimal room temperature and humidity, noise levels below 65 decibels, and strategies to reduce static electricity (Donoghue, 1983). There is no dispute over the fact that VDTs create visual strain, musculoskeletal discomfort, skin rashes, and stress for their operators (Charbonneau, 1982; Cluff, 1986; DeMatteo, 1985; Donoghue, 1983; King, 1984; McAlister, 1987; Quinn, 1983). The controversy over VDTs rests with their reproductive effects. This high-profile controversy might be expected to heighten the general concern of workers about other hazards in their environment.

To summarize, ergonomic considerations pointed to nursing activities related to both direct and indirect client services, the availability and adjustability of equipment, modification of the work environment, and adjustment of the work station and work patterns when VDTs are used. This category of hazard brought to the forefront the relationship of the physical plant to work hazards and its organizational locus of control.

Physical Hazards

Multiple energy sources exist in hospitals and are all potential sources of physical hazards[6] for HCWs. Excess heat, electricity, radiation, and noise are among the most common (Barrett, 1991; Coleman & Dickinson, 1984; Zoloth & Stellman, 1987). In addition to the traditional groups of workers at risk for heat-induced injuries or illness (e.g., firefighters, textile workers), hospital workers who use nonpermeable protective covering are at risk (Barrett, 1991).

Increasingly complex technology only adds to the risk of electrical burns or shocks, noise overload from equipment, and carcinogenesis, mutagenesis, or teratogenesis from scattered ionizing radiation (e.g., X-rays, gamma rays from radioisotopes). To date, the effects of very low frequency (VLF) radiation are unclear, but worthy of continued surveillance (Cluff, 1986; Marha & Charron, 1983; Marha, Spinner, &

Purdham, 1983). Marha (1983) cautioned against unnecessary exposure to VLF fields while sitting or standing close to the side or back of VDTs.

Other non-ionizing radiation such as microwaves, infrared, and ultraviolet rays may produce general heating in the body. Laser beams, an additional form of non-ionizing radiation, produce eye damage if viewed directly or reflected off adjacent surfaces (Olishifski & Plog, 1988).

Both ionizing and non-ionizing radiation may be generated by VDTs, but government-sponsored studies have concluded that "there are no significant levels of radiation emitted from any part of the EM [electromagnetic] spectrum" (Cluff, 1986, p. 502). Only reliable long-term studies of the effects of VDTs will allay the concerns (Cluff, 1986; Donoghue, 1983). Clusters of negative reproductive outcomes as well as individual outcomes have prompted investigations (Cluff, 1986). Although no evidence of radiation exists, Donoghue acknowledges worker stress and the inadequate monitoring of reproductive outcomes in Canadian workplaces (including biological, chemical, and physical exposures) and recommends ergonomic modifications, administrative controls, and education.

Lighting, humidity, ventilation, and temperature control are all part of the physical environment which can be hazardous for HCWs. Morey and Woods (1987) focussed on the quality of the indoor air environment for HCWs, in particular on the more common problems attributed to air quality. In all examples given, increased ventilation rates were consistently recommended for reducing the discomfort of HCWs from bioeffluents, tobacco smoke particulate, volatile organic compounds (off-gassing) in newly constructed buildings, and cleaning compounds used by housekeeping. In addition to the indications for improved ventilation, J. Crawford (1991) also identifies factors such as the number of individuals sharing a workspace, work overload, occupational stress, and perceptions of the work environment as requiring attention in any assessment of physical hazards.

In brief, physical hazards included temperature extremes, exposure to ionizing and non-ionizing radiation, overcrowding, and sick building syndrome (related to indoor air pollution). Like ergonomic hazards, physical hazards are part of the physical plant and are largely under the control of the organization.

Reproductive Hazards

The composite nature of reproductive hazards is made evident by the review of the available literature on biological, chemical, ergonomic, and physical hazards in the hospital work environment. That is, no one category of hazard accurately captures all the reproductive risks for HCWs. However, adverse reproductive outcomes from all categories of work hazards include infertility, spontaneous abortion, late fetal or neonatal death, low birthweight, congenital defects, developmental disabilities, and malignancies or mortality in childhood (Bregman, Anderson, Buffler, & Salg, 1989; Cunningham, 1986; Pries, 1979; Rachootin & Olsen, 1983; Sever, 1981; Triolo, 1989b; Van Den Eeden & Wilkinson, 1985; Vianna, Kovasznay, Polan, & Ju, 1984; Zenz, 1984; Zielhuis et al., 1984). Further, exposures to men as well as women may be implicated in reproductive disorders. A hazard to reproduction may affect reproductive structures, processes, or outcomes.

The assessment of reproductive health risks is probabilistic because it is difficult to demonstrate cause-effect relationships with certainty. According to Valentine and Plough (1983, p. 144),

> The case of reproductive risk is illustrative of the more general problems of protecting the health of workers within a context of scientific uncertainty, and within a highly charged political environment characterized by anti-regulatory sentiment and industries in economic decline.

Research on reproductive hazards is complicated by the fact that adverse outcomes may result from brief, but acute exposures or chronic, prolonged, and repetitive exposures (Lemasters & Selevan, 1984). The required methods for establishing reproductive risks are widely debated in the scientific community. This occurs especially when the quality of exposure registries varies, the potentially adverse reproductive outcomes and potential toxicants are numerous, and the appropriateness of study designs varies with the work environment (Hogue, 1986; Logan, 1986; Selevan, Hemminki, & Lindbohm, 1986). Lemasters and Selevan argue that occupational reproductive studies must use multiple exposure models and multiple sources of exposure information. Also, since congenital defects are found in approximately 2 to 3 percent of the population, very large sample sizes are needed to establish a causal relationship in the workplace (Logan, 1986).

Haldane et al. (1969) monitored 1568 pregnant Canadian nurses providing nursing care in the hospital or home, for subsequent delivery of congenitally defective or premature infants. The incidence of congenital defects in the infants born to those nurses who reported experiencing an infectious illness during their pregnancy was double that of controls. As many as 80% of the infants born to pregnant HCWs exposed in the first trimester of pregnancy to the commonly encountered rubella virus have demonstrated heart defects, cataracts, and/or sensorineural hearing deficits (Nelson & Sullivan-Bolyai, 1987).

A second commonly encountered virus in hospital or clinic patients, cytomegalovirus (CMV), presents risks to the pregnant HCW during any of the three trimesters of pregnancy, risks which include infant death, hearing deficit, and mental retardation among others (Nelson & Sullivan-Bolyai, 1987). A third common virus, varicella-zoster, contributes to infant mortality when the pregnant HCW is infected late in gestation (Hoffmann et al., 1991). Although pregnant HCWs are considered to be at no greater risk than other HCWs for infection with HIV, the infant is clearly at risk for perinatal (intrauterine, puerperal, or postnatal) transmission (Friedland, 1990; "Leads", 1987). Prospective studies indicate that rates for perinatal transmission range from 23% to 45% (Hoffmann et al., 1991).

When HBV infection occurs in the third trimester of pregnancy, there is a high risk of transmission to the fetus. A high risk of transmission also occurs among asymptomatic carriers of HBeAg, one particular hepatitis antigen (Hoffmann et al., 1991). To acquire some perspective on the degree of risk for this very commonly encountered virus in health care settings, Nelson (1987) reports that HCWs in frequent contact with blood are at intermediate risk of acquiring HBV, and that those HCWs with no or infrequent contact with blood are at low risk.

A number of chemical hazards present teratogenic risks for HCWs. Low concentrations of carbon monoxide, for example, have been demonstrated to reduce birth weight and retard mental abilities in infants of exposed women (Zenz, 1984). Hexachlorophene was revealed to cause an increased risk of birth defects among pregnant nurses using the detergent for handwashing (Coleman & Dickinson, 1984). Antineoplastic drugs, ethylene oxide in cold gas sterilization, and waste anaesthetic gases are among the most recognized reproductive hazards (Coleman & Dickinson, 1984; Guidotti, 1987a; Haney et al., 1990; Hatch & Stein, 1986; Rogers, 1987; Rogers & Emmett, 1987; Stevens, 1989; Triolo, 1989b; Van Den Eeden & Wilkinson, 1985; Zenz, 1984; Zielhuis et al., 1984; Zoloth & Stellman, 1987). To reiterate their effects, antineoplastics are implicated in spontaneous abortions, genetic mutations, and congenital defects; ethylene oxide is suspected of causing spontaneous abortions or genetic damage; and waste anaesthetic gases have been demonstrated to increase the risk of spontaneous abortions and congenital abnormalities.

Of all the physical hazards, ionizing radiation has the greatest known reproductive risk for HCWs in terms of reduced fertility, spontaneous abortions, stillbirths, congenital defects, and increased incidence of childhood cancer, as well as genetic damage affecting succeeding generations (Canada Safety Council & Canadian Advisory Council on the Status of Women, undated; Zoloth & Stellman, 1987). Damage to biological tissue is dose-related and stringent regulations have been developed for fertile and pregnant women (Zenz, 1984). Workers who have been identified as at-risk must wear exposure badges (monitoring devices), but workers exposed to irregular scattered radiation may slip through surveillance programs (Zoloth & Stellman, 1987). Despite the number of studies that discount the threat of radiation emissions from VDTs for pregnant workers, for example, researchers acknowledge that only prototypes, not individual VDT units, are tested against government standards and that the possibility of defects or malfunctions cannot be discounted (Cluff, 1986; Donoghue, 1983). Since defective equipment remains a possibility, employers should check VDTs periodically for radiation leaks (Cluff, 1986).

To summarize, reproductive hazards appear to be surrounded by scientific uncertainty regardless of the experience of workers. Valentine and Plough (1983) suggest a political economic motive for this uncertainty, which only stresses the importance of worker vigilance. Of the major categories of hazards, chemical, biological, and physical were the most likely to be threats to reproductive health based on the available research. Any hazard that is critical for the health of future generations of workers, if not the mental and physical health of current workers, needs to be assessed in the work of CHNs. But reproductive health is not a requirement of the workplace nor an aspect of personal health that is subjected to public scrutiny and it is easily forgotten or ignored until clusters of negative reproductive outcomes occur. Sorting through the myriad details on reproductive risk in the workplace, it became apparent that it is the organization which develops immunization and equipment monitoring schedules; obtains, explains, and makes available the MSDSs; and provides disposal mechanisms for hazardous materials. In the absence of definitive research, however, the organizational factors perceived by CHNs to affect their reproductive health and their reported negative reproductive outcomes must be the point of departure for this study.

Safety Hazards

Like reproductive hazards, no single category represents the totality of hazards for the safety of HCWs. If safety is the maintenance of the physical integrity of the body, bites, scratches, and needlesticks are biological threats to safety (Astbury & Baxter, 1990; Neuberger et al., 1988; Rowe & Giuffre, 1991). Burns from chemicals represent another type of threat and slippery floors, poor lighting, and electrical shocks represent physical threats to safety (Neuberger et al., 1988; Triolo, 1989b).

In addition to these safety hazards, violence against HCWs can no longer be ignored. A heavy workload because of understaffing, working in isolation, home visits, evening work, and lack of security all facilitate violence against HCWs (C. Crawford, 1990; Roberts, 1990/1991). Still, employees feel that they should cope, while employers tend to blame the victim, and argue that violence is to be expected with work in the public sector (C. Crawford, 1990). But hospital staff have a right to expect that they won't be subjected to assault at work (Snapp, 1990). To be certain, occupational homicides and non-fatal injuries usually occur when a direct exchange of cash is required for services (Hales, Seligman, Newman, & Timbrook, 1988), but hospital employers should still be encouraged to acknowledge the risk factors in work environments for employees in the health care industry. Neuberger et al. (1988) noted that being struck by a person ranked tenth in the list of injuries sustained by medical centre employees.

Wilkinson (1987) demonstrated that nurses, along with housekeepers, maintenance workers, and food service workers are at the highest risk for occupational injury. In an analysis of the injury or illness forms filed by 356 employees during a two-year period, Wilkinson observed that professional nurses reported the highest number of injuries (although the nurse aide group had the highest *attack* rate when the size of the population was considered). By department, nursing had the most injury reports (37%) and needlestick injuries were the most frequent. Even though Neuberger et al. (1988) also observed needlesticks to be the most frequent, they reported that injuries from lifting cause more lost time. They concluded that employee groups with high injury rates should be subjected to further investigation.

Finally, to summarize the insights gained from reviewing HCW safety hazards, client violence, needlestick injuries, and injuries from lifting must be considered in the work environments of CHNs. These all derive from direct client services. By extension from the research on ergonomic hazards, safety hazards must also be considered for indirect client services. In this literature, identification of the nature and cause of injuries was the predominant method for obtaining information on the type of service associated with risks to safety and reflected a reactive not proactive stance by the organization. That is, by focussing on the injury and the behaviour of injured workers, organizations perpetuate a "blame-the-victim" ideology (M.H. Becker, 1986; Castillo-Salgado, 1987; Green, 1988; McLeroy et al., 1987; Orr, 1988; W. Ryan, 1971; Sass, 1986; Wikler, 1987). At no point in this literature was there reference to organizational activities for preventing injuries. That raised an issue for exploration in this study.

Conclusion

Returning to the purpose of this review of the literature on hospital nurses, it is now clear that the second dominant paradigm in the occupational health field, the environmental perspective, has been applied to hospital-based nurses. The social psychological (individualistic) approach used in the CHN literature and the environmental perspective used in the hospital nurse literature together apply the typology of work hazards encountered in the occupational health field. The combination provides direction for an investigation of the physical and psychosocial domains in CHNs' work environments. The organizational factors implicated in work hazards, however, are still only implicit in the literature on hospital nurses. If organizational factors are to be subjected to closer scrutiny, another theoretical approach is required.

Summary and Conclusions on Substantive Focus

Alberta Health (1991c) revealed occupational health and safety issues to be the second most important dissatisfier for CHN subjects. The broad scope of the study, however, limited exploration of work hazards to two categories and just 5% of questionnaire items. Nonetheless, it underlined the relevance of research focussing strictly on work hazards and provided current demographic data for comparative purposes. Other Alberta studies, from 1970 to 1988, did not address occupational hazards per se, but did illustrate factors to be considered in the research design: differences in travel time for urban and rural CHNs, inconsistencies in staff selection practices across health units, excessive paperwork, and work overload. Among managerial CHNs, the conflict created by administrative versus professional responsibilities was identified. For staff CHNs, the importance of individual definitions of the situation for nursing practice was recognized.

Other Canadian studies placed work conditions among the top ten critical issues for CHNs, and suggested that structural and contextual factors (e.g., resource allocation, coordination with other health professionals) affect CHN practice. Hazards in the physical work environment were essentially ignored except for noise, safety while managing a vehicle, client violence, and the environment. Data for the psychosocial work environment implicated heavy workloads, staff shortages, interpersonal relations, administrative stressors, and stressors related to clients. In sum, Canadian studies focussed on psychosocial hazards and alluded to underlying organizational factors.

International studies corroborated the sparse Canadian data and provided additional insights. First, British quantitative and qualitative data substantiated the overwork, interpersonal friction, abusive clients, and structural factors (e.g., staff ratios, availability of clerical assistance, chain of command) among stressors for CHNs. Next, qualitative data provided more details regarding frequent stressors such as clients, administration, professionals, overtime, and workload and identified the lesser stressors of job insecurity, inadequacies of management, and factors external to the organization (e.g., dogs, weather). Safety was not explicitly addressed, although negative client attitudes (e.g., anger, hostility) and behaviour (e.g., violence) emerged regularly as stressors. In spite of identifying the chronicity of stressors, the researchers sought only individually oriented coping strategies from subjects and recommended that individual time and stress management skills be developed. Conversely, they made recommendations for technological and structural changes without respondent input.

An American study (Cohen, 1990) focussed on managerial CHNs. Despite the reflection of structural and contextual factors in the psychosocial hazards reported by subjects, only individual coping strategies were analyzed. The more important stressors were identified as work overload, underfunding, understaffing, role conflict and ambiguity, personnel, and the environment. The lesser stressors included political issues, power, ethics, regulation, communication, and relations with superiors. A second American study (Lucas et al., 1988) found significantly more satisfaction among CHNs in management than in staff positions and significantly less satisfaction among CHNs taking work home to complete than among those who left work at the office. As a result, structural changes were made in the state public health system. In brief, the international studies further emphasized psychosocial hazards, neglected the physical work environment, took an individually oriented approach, and relied on survey data or qualitative data that focussed on the individual.

Because the Canadian and international studies did not address biological, chemical, ergonomic, physical, reproductive, and safety hazards for CHNs, it was necessary to review the related literature on hospital-based nurses. Here, biological hazards were widely recognized and their most probable route of transmission was by needlestick. The four most significant pathogens were the human immunodeficiency virus (HIV), hepatitis B virus (HBV), rubella virus, and tuberculosis bacillus. Although infection by HIV was more widely publicized, HBV infection among HCWs was many times more common and will persist as a threat to HCWs in spite of the fact that immunization against HBV, rubella, and tuberculosis is available.

Chemical hazards had short- and long-term effects in exposed HCWs, thus complicating their identification. Chemical burns, irritation to skin and mucous membranes, and headaches or dizziness were among the effects associated with the preparation or handling of drugs, cleaning solvents, and disinfectants. Long-term effects from exposure to antineoplastic drugs, ethylene oxide sterilizer, metals such as mercury, and waste anaesthetic gases were more permanent: cancer, genetic mutations, or congenital defects in the offspring of exposed workers. Organizational factors associated with hazards were the provision of personal protective equipment, disposal mechanisms, education, built in safety cabinets, and adequate ventilation.

Ergonomic hazards were associated with repetitive activities (e.g., lifting), awkward body postures, and poorly designed work areas resulting in back and torso injuries among employees. While movement of patients, equipment, or furniture posed ergonomic threats to HCWs, so did the use of VDTs. Again, organizations had a role to fulfill in reducing ergonomic hazards by responsibility for the physical plant: providing mechanical lifting devices, adjustable equipment, and suitable conditions for the use of VDTs (e.g., reducing glare, increasing humidity).

Physical hazards derived from noise, electrical equipment, sources of ionizing and non-ionizing radiation, and ambient regulators (e.g., lighting, ventilation, humidity, and temperature). Further, the number of employees sharing a workspace, presence of tobacco smoke, housekeeping practices, and installation of new materials (e.g., insulation, upholstery fabrics) all contributed to a common problem of indoor air quality. Mechanisms under the control of the organization included the setting of adequate ventilation rates, equipment maintenance, and provision of monitoring systems for assessing exposures to physical hazards (e.g., radiation exposure badges).

Reproductive hazards are a composite hazard. That is, no one category of hazard already identified captures all of the reproductive risks for HCWs. Reproductive hazards were not readily identifiable for a number of reasons. First, baseline reproductive health was not a prerequisite for employment. Next, sexual function or reproductive capacity were not observable, quantifiable, or subject to supervision in the institutionalized workplace. Third, the effects of reproductive hazards were not immediate. However, adverse outcomes (e.g., infertility, spontaneous abortions, congenital defects, reduced libido) were observed for HCWs following exposure to biological hazards (e.g., the rubella virus or cytomegalovirus), chemical hazards (e.g., antineoplastic drugs, gas sterilants, or waste anaesthetic gases), and physical hazards (e.g., ionizing radiation). Negative reproductive outcomes from exposure to VDTs during pregnancy were a controversial topic. Research methods for establishing reproductive risk were also widely debated. Research on reproductive hazards has been complicated by the range of adverse outcomes, the need for large sample sizes, and the number of potential toxicants.

Safety hazards are also composite in nature. Needlestick injuries, bites, and scratches are biological threats to safety, burns from chemicals are another type of threat, and physical threats include electrical shock, slippery floors, and inadequate illumination. Although HCWs have a right to expect that they won't be subjected to assault at work, violence towards HCWs is yet another threat to safety.

A critical assessment of this literature using the theoretical orientation discussed in the first section of this chapter has brought to light both the inseparability of organizational factors and work hazards and the failure of research to confront organizational issues explicitly. In the Canadian and international literature on CHNs, organizational factors were associated with psychosocial hazards. Workload, interagency relations, staffing levels, clerical work, and the hierarchy of authority all surfaced as stressors. In the literature on hospital-based nurses, the physical plant of the organization and its relevance for ergonomic and physical hazards came to the forefront, contradicting the predominant research focus on the individual and injury surveillance. Similarly, organizational factors such as budget, purchasing, staffing, formalization of policies, standardization of procedures, acknowledgement and communication of relevant legislation, and provision of disposal mechanisms for hazardous wastes became an underlying theme. No researcher made these factors an explicit issue to be addressed, yet they were woven implicitly throughout the discussions.

To conclude this summary of the substantive literature, no comprehensive examination of the work hazards of CHNs has been conducted. Implicit and fragmented evidence implicates organizational factors in the work hazards of HCWs, but no study explicitly addresses the organizational context. Instead, there is a greater emphasis on the individual than on the organization. On theoretical and empirical grounds, a new perspective is needed. Organizations have a "corporate social responsibility" for health and safety (Shaw, 1990, p. 3), a legislated responsibility to control work hazards (Occupational Health and Safety Act, 1980), and an implicit moral and ethical responsibility to minimize work hazards (Krause, 1977; Sass, 1986, 1989). In the next chapter, I describe the quantitative and qualitative methods that were used in this exploratory research design to generate a theoretical perspective that would begin to address this gap in the research.

Footnotes

1 Despite Durkheim's accentuation of the similarities between the natural sciences and sociology (Giddens, 1987).

2 The proportion of registered small businesses in Alberta remained stable at .96 between 1977-1985 (MacKinnon, 1987). The small business sector represents the extreme case in contrast with organized big business which has well-developed occupational health services, well-documented hazards, and documented expenditures on health and safety programs for reducing negative outcomes. During the 1977-1985 time period, small business was defined as an enterprise with less than 40 workers.

3 Presentation by Douglas Mah, lawyer for the Workers' Compensation Board in the Seminar at Law Series held in the Faculty of Law, the University of Alberta, on January 21, 1989.

4 In the Province of Alberta, these are only poisoning (e.g., lead), infectious diseases (e.g., hepatitis B), pneumoconioses (e.g., silicosis), asthma, extrinsic allergic alveolitis (e.g., farmer's lung), noise deafness or hearing loss, contact dermatitis, vascular disturbances of the extremities, radiation injury or disease, and erosion of the incisor teeth from acids (WCB, 1981).

5 A total of 11 variables were measured in the 4 questions on occupational health and safety. An additional 12 variables referred to workload and staffing under different major categories.

6 Physical hazards refer to noise, temperature extremes, ionizing radiation, non-ionizing radiation, pressure extremes, vibration, ventilation, illumination, and humidity (Olishifski & Plog, 1988).

CHAPTER 3: METHODS

Quantitative and qualitative methods were used in this exploratory design in order to answer the research questions and begin substantive theory development. The first purpose of this chapter is to describe the study sample, stages of data collection, procedures for data collection and analysis, and ethical considerations. The second purpose is to describe the use of multiple triangulation. Data were collected in two stages from community health nurses (CHNs) in health units in the Province of Alberta. The first stage employed questionnaires, individual interviews, and public documents to collect data at two levels of complexity: individual and organizational subunit. The next stage involved focus groups with CHNs in each of the sample health units. Multiple triangulation (methodological, theoretical, data source, and unit of analysis) made a significant contribution to the research by facilitating confirmation of the results for hazards and exploration of the organizational factors associated with them.

Population and Sample

The Organizations

The exploratory nature of the research was maximized to identify as fully as possible the organizational factors associated with the production and reproduction of CHNs' perceived work hazards. Factor-searching, the formulative stage of theory building (Field & Morse, 1985) was advanced by the selection of a sample of organizations demonstrating a range of characteristics. It was the diversity and autonomy of the health units in this province which determined the sampling procedure that was followed.

The Province of Alberta is divided into 27 locally autonomous health units for the provision of public health services to the population. In 1980, the Health Unit Act designated 25 of the local health authorities as "health units", each administered by "a board" (Section 4.1). In a separate piece of legislation, the two cities having populations in excess of 100,000 were designated as "health districts", each administered by a "local board of health" (Public Health Act, 1980, Sections 17.1, 21.1). The revised Public Health Act (1984) repealed the Health Unit Act (1980) and legislated all 27 jurisdictions as "health units", each under the administration of "a local board" (Section 7.2).

Despite the homogeneity of terms under the existing legislation, there are major structural and contextual differences among the health units. In size alone, the original "local boards of health" in Calgary and Edmonton constitute a population that merits separate consideration. Both employ over 350 full-time equivalent (FTE) workers, far in excess of the range between 6 and 117 FTEs employed by the other health units (W. Samis, personal communication, November 8, 1990). Not only are they vertically, horizontally, and spatially complex, but they are also standardized, formalized, and technologically differentiated (Calgary Health Services, 1990; Edmonton Board of Health, 1990). They are also similar in geographical dispersion, collective bargaining status, urban-industrial environment, and personnel configuration.

In contrast to the two largest cities, the 25 former "health units" vary from medium to small in size and are more diverse. First, the organizations are conspicuously different in their geographical dispersion and location. Figure 1 presents the 1987 boundaries of all 27 health units. Second, their collective bargaining status varies. Sixteen CHN employee populations constitute local or group collective bargaining units under Alberta labour legislation. Nine are not organized. Next, their payroll size spans a difference of over 100 employees. Further, some organizations employ principally full-time staff, others hire more part-time employees. A fifth distinguishing feature, participation in a pilot global budgeting scheme by three health units, was eliminated in 1991, when Alberta Health, the government department that has provided 100% of the funding for community health programs since 1973 (Schartner, 1982), terminated the pilot project. Finally, the health unit operating environments are characterized by urban, rural, agricultural, and industrial contexts. These 25 health units constituted the population of interest for sampling.

Criteria for Selection

In the absence of a theory for identifying the organizational determinants of work hazards, the selection criteria evolved from the most obvious structural and contextual differences in health unit organizations. Structural and contextual dimensions may be equated to organizational traits which "describe organizations much the same way that personality and physical traits describe people" (Daft, 1989, p. 17). I consulted with the Executive Director of the Health Unit

Association of Alberta (HUAA), the association formed by all 27 health units, before determining the criteria for selection. Subsequently, both staff and managerial CHNs in one health unit that I approached verified that the criteria were representative of the major organizational differences.

According to Daft, the contextual dimensions of organizations are their goals and strategies, size, environment, and technology. Since legislation requires all health units to provide public health services to the population, selection focussed on the other readily identifiable characteristics: geographical location, size, and service to urban/rural populations. Although Daft describes eight structural dimensions of organizations, the available information for these 25 health units included only professionalism, personnel configuration, and collective bargaining status. Accordingly, these completed the selection criteria. Professionalism for the CHN subunit was a known constant to the extent that *all* CHNs must be Registered Nurses which implies a minimum of two or three years of post-secondary education and successful completion of registration examinations. When a province-wide union represents employee groups, it could be argued that collective bargaining status is a contextual dimension. However, because of the known local variations (e.g., informal committees, formalized committees, local and group union agreements), collective bargaining status as an *internal* characteristic or *structural* dimension was of particular interest in sample selection.

Purposive Sampling

A purposive sample was selected in order to capture the major organizational differences and increase the breadth of factors for scrutiny. Table 1 lists the selected organizational characteristics. Researchers use purposive sampling to ensure that units of analysis displaying or representing specific attributes or perspectives are included in the study (Berg, 1989; Brink, 1989; Field & Morse, 1985). Similarly, researchers maximize the differences between the units of analysis in order to saturate the developing categories (Glaser, 1978). Because this research was designed to explore those characteristics of health unit organizations that underlie perceived work hazards, the manifest organizational differences were represented in the sample. This permitted me to maximize the identification of organizational characteristics that influence the occupational hazards perceived by CHNs.

Although Glaser (1978) considers a priori purposive sampling to be selective sampling, no characteristic was held constant across all the sample organizations and no characteristic had to be fundamentally different for all the sample organizations. It was important to include organizational similarities and differences for the purpose of constant comparison during data collection and analysis. Further, inclusion of all major organizational differences in the selection criteria permitted the discovery of data that might have been disregarded. Strauss and Corbin (1990) refer to this as "open sampling", a necessary characteristic of the initial stage of research "to uncover as many potentially relevant categories as possible" (p. 181). In Chapter

Seven, I present and discuss the major categories that emerged from the data. These categories become the elements of a substantive theory on organizational factors in community health that are implicated in work hazards. By exploiting to the maximum the manifest organizational differences and ensuring the inclusion of organizations reflecting those differences in the sample, the exploratory design was expected to yield richer data.

Access

A letter requesting access was sent to the Manager, Community Health Nursing, Family Health Services, Public Health Division in Alberta Health on August 23, 1990. Ultimately, four levels of health professionals were approached: government consultant CHNs; CHN administrators; staff CHNs; and medical officers of health. Following a meeting with the Manager of Community Health Nursing on September 13, 1990, arrangements were made for a 15 minute presentation at the October 24, 1990 Calgary meeting of CHN administrators from all the health units. During the presentation, I invited any interested health units to indicate their support in principle for the proposal and/or their willingness to participate in the research. On November 22, 1990 I met with staff CHNs in a southern health unit to assess their reaction to the proposal and on November 28 interviewed the medical officer of health/chief executive officer in a central health unit. All individuals and groups expressed considerable interest and support for the study. On December 5, 1990, the Manager of Community Health Nursing sent a letter to all CHN administrators, copied it to the chief executive officers, and appended my one page proposal description

(Appendix A). By January 14, 1991, access had been assured. Eight health units indicated either verbally or in writing their willingness to participate in the study and five letters of support were received, including a letter from the Executive Director of HUAA.

Sample Selection

All health units that volunteered to participate in the research were considered for inclusion in the sample, on the assumption that they were willing to cooperate as research subjects. Coupled with their specialized knowledge, these factors were expected to facilitate the collection of valid data and discovery of general categories and properties. Since the generation of theory demands purposeful, systematic processing of general categories, rather than verification of facts from a randomly selected sample (Glaser & Strauss, 1967), a volunteer sample was appropriate.

In order to have proportionate representation from health units across the province, the criteria for geographical location were met first. By selecting four health units from among the organizations that volunteered and approaching one other health unit, I formed the study sample.

In all cases, inclusion occurred only when I was satisfied by written and verbal communication that three levels of public health professionals within the organization were in agreement with participation in the study (i.e., the staff CHNs, managerial CHNs, and chief executive officer, who was frequently a medical officer of health). Moreover, I discussed the project in all selected health units with staff and managerial CHNs prior to beginning data collection.

Depending upon the travel distance to the health units, the meetings ranged from weeks to hours in advance of data collection.

Finally, I attempted to have each selected organizational characteristic represented by at least two organizations. Not only did it provide more protection for organizational anonymity, but it also facilitated saturation of the emerging codes by increasing the number of available perspectives. In contrast, ensuring the heterogeneity of the sample broadened the potential range of organizational patterns for analysis. I assumed that the organizational characteristics selected for the inclusion criteria contributed to the variation and represented the major organizational differences among the health units.

Sample Description

The study sample contained five health units, a number expected to permit saturation of the major theoretical categories. Table 2 displays the sample profile according to the selected organizational characteristics. With the exception of the totally urban environment criterion, all selection criteria were represented in the sample by one or more organizations.

The Individuals

In 1990, over 800 CHNs were employed by the 27 locally autonomous health units (Alberta Health, 1991b). This study excludes the cities of Calgary and Edmonton, focussing on the CHNs employed in 1991 in the remaining 25 health units.

Normally, CHNs do not provide direct home nursing services in the Province of Alberta. Coordinated and direct nursing care is under the domain of home care nurses (Public Health Act, 1984). The CHN focusses on health maintenance, health promotion, injury and illness prevention, and community development (CPHA, 1990). The organizational positions for providing those services range from staff CHNs who implement generalized community health nursing programs, through specialist CHNs in particular programs (e.g., communicable diseases, hereditary diseases, maternal-child health, sexual education), to supervisors or department heads and managers or directors of community health nursing programs. Although all CHNs have post-secondary education, they differ by age, level and type of education, nursing experience, full- or part-time employment, marital status, and responsibility for urban versus rural programs (Alberta Health, 1991c; Moore, 1977; Schartner, 1982).

Criteria for Selection

One purpose of the study was to identify the hazards or stressors of CHNs' work. Only CHNs who had at least one year of community health nursing experience and who did not provide home care services were eligible to participate in the study. For the beginning practitioner, the stressors of the initial period of a professional career, an incomplete experiential base for those in programs with an annual cycle, and a tendency to focus on professional responsibilities and performance rather than on the organizational dimensions influencing performance might all have confounded results. Moreover, to be knowledgeable about organizational factors related to occupational health, individuals must be familiar with the organization (Molnar & Rogers, 1976). Since the occupation of home care nurse is not identical to that of community health nurse (Green & Driggers, 1989) data were not collected from individuals who functioned in both capacities in order to avoid confounding results.

Quota Sampling

Theoretical, logistical, and political considerations determined the sampling strategy. A stated purpose of the research was to begin substantive, not formal, theory development in the area of organizational determinants of work hazards. Accordingly, the organizational units of analysis were chosen to embrace a diversity of organizational characteristics. In a similar manner, the individual units of analysis were chosen to achieve a diversity of respondent perspectives on the organizational characteristics. More precisely, in grounded theory subjects are selected so that as many properties as possible may be generated for the developing theoretical categories (Glaser, 1978).

The maximum number of available subjects was the number of CHNs employed by each of the participating health units. However, the literature on grounded theory research contains examples of the theoretical saturation of categories using small samples (Willoughby & Keating, 1991; Wuest & Stern, 1991). Brink (1989) maintains that a necessary feature of an exploratory design is a purposive sample of 25 or less subjects. Yet a sample of five CHNs from each of five organizations might not have been sufficient to achieve theoretical saturation. While qualitative interviews generate many hours of transcription costs which must be considered, the volunteering organizations expressed concern that as many CHNs as possible be provided with the opportunity to participate in the study.

After corroborating the number of available CHNs and considering all other factors, I resolved to use a quota sampling frame with a total of 12 respondents in each of the five organizations. I assumed that the quota sample was large enough to make saturation of emerging theoretical categories a possibility. Due to the overlap of organizational characteristics reflected by the sample, the actual number of perspectives on a given organizational dimension might be provided by between 24 and 48 individuals (see Table 2) and be more than enough for saturating theoretical categories.

Sample Selection

Generally, CHNs hold staff or managerial positions in health units. To ensure input from the limited number of management positions, I invited all ten managerial CHNs in the sample of five health units to participate. This provided more perspectives on the organizational factors associated with managerial work hazards or stressors, more data for comparisons, and better protection for identities.

The remainder of the quota in each health unit was filled by staff CHNs. I requested that a) a staff person be designated to approach staff CHNs, thus avoiding potential or actual coercion by management, and b) that everyone be approached to participate, if the health unit had 12 or fewer eligible CHNs, or c) CHNs in the larger health units be randomly selected from among the eligible potential subjects. Randomization was suggested as a strategy for fairness, not representativeness, to provide everyone with an equal opportunity to be selected or to participate, given their interest and the implications of the study. (For greater detail, see Ethical Considerations). In fact, the procedure for selection varied among the health units and my concern that staff might feel pressured to participate seemed unfounded. A double check, however, was incorporated in the Informed Consent Form (Appendix B).

In health units with 12 or fewer CHNs, all eligible CHNs were approached by the managerial CHN during open staff meetings. All but one CHN consented to participate and one was not eligible because of less than one year's experience. In health units with more than 12 potential respondents, one of two strategies was employed by the organization. Either a staff or managerial CHN randomly selected names proportionately by department or regional office or the CHN group itself decided pragmatically who would participate on the basis of availability (i.e., no conflict with vacation time, third Friday off, part time schedule, maternity leave, or injury leave). Two randomly selected CHNs declined to participate and were replaced when additional names were drawn. Later, during data collection, another randomly selected subject was replaced by an available, eligible volunteer when a family matter intervened. In brief, the quota sample also had characteristics of a sample of convenience (Field & Morse, 1985).

Sample Description

Table 3 presents the characteristics of the sample of CHNs. Fifty-seven female health professionals constituted the study sample: 10 managerial CHNs and 47 staff CHNs. One managerial CHN was in an acting capacity and had staff responsibilities as well. Thirty-five (61%)[1] worked full time, 16 (28%) worked part time, and five (9%) were job-sharing.

The highest levels of education reported in the sample included 40 individuals (70%) with a baccalaureate degree in nursing, five (9%) with a diploma in public health nursing, and eight (14%) with an RN diploma. The remaining 7% had non-nursing undergraduate or graduate degrees or did not specify. Nine (16%) were currently enrolled in an educational program: four in a nursing program, four in a non-nursing program, and one did not specify. One-third of the sample (19 subjects) had received some education in occupational health. Table 4 outlines the educational methods used by subjects and includes the three subjects who hold certification in occupational health nursing.

With respect to professional experience, CHNs averaged 10.8 years of community health nursing experience (median = 10.0, mode = 10.0) and the range was 2 to 33 years. The number of years worked in the current health unit was 8.3 years on average (median = 7.0, mode = 10.0) and ranged from 1 to 22 years. When asked about *official* over-time, 11% did not respond, 44% reported none, and 46% reported from one to 12 hours per month. In contrast, 77% reported from one to 40 hours of *unofficial* overtime per month.

Fourteen (25%) of the CHNs were sole breadwinners. Twenty-seven (47%) were earning between $30,000 and $39,999, 17 (30%) earned less and 13 (23%) earned more.

Of the 55 who responded for 'age', CHNs ranged from 26 to 61 years of age and averaged 41.5 years (median = 41.0). Nine (16%) were single, 44 (77%) were married or living common-law, and four (7%) were widowed or divorced. Twenty-one (37%) had no children living at home. Twenty-six percent had preschoolers, 23% had six to ten year olds, 23% had 11 to 15 year olds, 18% had 16 to 20 year olds and 5% had older adult children at home.

In sum, five autonomous and diverse health units were selected for the sample from among volunteer and non-volunteer organizations. The organizational inclusion criteria were used to maximize both differences and similarities among the sample, capture the organizational factors associated with CHNs' work hazards, and facilitate theory building. Logistical, political, and theoretical considerations underpinned the decision to set a quota of 12 CHNs per health unit. Ten managerial and 47 staff CHNs became subjects. Ranging in age from 26 to 61 years, they had an average of 11 years of community health nursing experience. While the majority had a baccalaureate degree in nursing, only one-third had any type of education in occupational health.

Data Collection

Data were collected in two stages over a ten month period in 1991. Between March 1 and June 14, 1991 pretests, questionnaires, and interviews were conducted and between November 4 and December 9, 1991 pretesting and the focus groups were completed. Figure 2 outlines the schedule of activities.

Questionnaire

The Community Health Work Hazards Questionnaire (Appendix C) was the primary instrument used to answer the first research question: "What are the actual or potential biological, chemical, ergonomic, physical, psychosocial, reproductive, and safety hazards that community health nurses perceive in their work environments?" A standardized questionnaire was considered appropriate for documenting the nature of CHNs' perceived hazards due to the well-established categories of work hazards in the literature. The work hazards of CHNs, not the categories of work hazards, were the unknown. I will discuss the development of the questionnaire before proceeding to questionnaire format, pretesting, and administration.

Background and Development

Workplace assessments of hazardous exposures are generally performed using the industrial hygiene typology of hazards (Olishifski & Plog, 1988; Ott, 1977). At the worksite, the mandate of salaried or contracted industrial hygienists is to recognize, evaluate, and control the biological, chemical, ergonomic, and physical hazards to health. When individuals seek health care and self-report their workplace hazards, however, even prudent health professionals do not always use the four industrial hygiene categories for history-taking (Becker, 1982; Coye & Rosenstock, 1983; Demers & Wall, 1983; Felton, 1980; Ginetti & Grieg, 1981; Guidotti et al., 1983; Gumpel & Mason, 1974; Pecoraro, Inui, Chen, Plorde & Heller, 1979; Rosenstock, Logerfo, Heyer & Carter, 1984). They evaluate, albeit inconsistently, the psychosocial hazards, home and community hazards, negative reproductive outcomes, safety risks, unemployment, and one or more of the four industrial hygiene categories (Becker, 1982; Coye & Rosenstock, 1983; Felton, 1980; Ginetti & Grieg, 1981; Goldman & Peters, 1981; Guidotti et al., 1983; Pannet, Coggon, & Acheson, 1985; Sandy Hill Health Centre, 1984; Shindell & Goldberg, 1981).

By combining approaches from the environmental and biomedical models, I had previously developed a more comprehensive instrument for assessing work hazards: the Occupational Risk Factor Assessment Instrument for Community-Based Health Professionals (Skillen, 1988). One section was to be self-administered by workers who approached community professionals for health care. A second section contained questions for health professionals to use when reviewing the completed questionnaire with their clients. Content validity was established using an expert panel comprising ten industrial hygienists, occupational health physicians, and occupational health nurses. Because this panel demonstrated a minimum of 80% agreement for each and every item on the questionnaire, it was adapted for use in this research with health professionals as employees.

Adaptation

Consistent with the findings of the literature review in Chapter Two, the seven major sections of the Occupational Risk Factor Assessment Instrument focussing strictly on the workplace were retained: biological hazards, chemical hazards, ergonomic hazards, physical hazards, psychosocial hazards, reproductive hazards, and safety factors. Both reproduction and safety are vulnerable to hazardous exposures. No single category of work hazard, however, is exclusively implicated. On the contrary, more than one may threaten reproduction and safety. For example, exposure to the chemicals chlordecone or dibromochloropropane produces infertility in male workers (Whorton, 1986) and chemicals are known to be excreted in breast milk (Rogan, 1986). The rubella virus, a biological hazard, produces congenital defects in the fetus during the first trimester of pregnancy. Occupational fatigue has been linked with premature delivery in pregnancy (Mamelle, Laumon & Lazur, 1984).

With respect to safety, physical work hazards are implicated in drownings, electrocution, and radiation damage ("Electrical Contacts", 1987; "In Memoriam", 1986, 1989; Miller, 1986; "Shedding Some Light", 1990; "Worker Drowns", 1988). Respiratory arrest from asphyxiants or burns from explosions are outcomes of chemical hazards ("H_2S Update", 1987; "Isocyanate Update", 1986; Miller, 1986). Ergonomic hazards account for back and repetitive strain injuries (Desrosiers, Torres-Moreno & Smith, 1987; Elie, 1988). Impaired workers with reduced physical or mental functioning and illiterate workers unable to read safety warnings represent but two psychosocial hazards for worker safety (Grueninger, 1986; "The Impaired Worker", 1988; Kenter, 1987; von Hauff, 1990). In short, questions on the five generic hazards would implicitly address safety and reproductive issues, but not make them explicit enough to draw conclusions.

Including the two sections on safety and reproductive hazards makes them explicit, but also shifts the focus from solely hazards or stressors to include policies, procedures, and outcomes (e.g., number of injuries; effect on libido). Neither reproductive hazards in general nor safety issues specifically for CHNs are sufficiently researched to have all possible hazards identified for inclusion in the questionnaire. However, work-related safety and reproductive issues were not overlooked and the two sections reflected the diversity of workplace factors which could affect outcomes.

Individual questions or items were also deleted or adapted. Solely occupational exposures, but not lifestyle risks (e.g., smoking), were included. Lifestyle risks would be assessed in a regular medical history and were not the phenomena of interest.

All questions or items were reviewed and modified in light of the substantive literature review on CHNs. As examples, "colleague" replaced "fellow worker", "infectious agents" were specified and "hard hat" was removed from the list of personal protective equipment. Psychosocial hazards such as "ethical dilemmas", "relationship with community physicians", and "work overload" were added to a checklist of possible hazards. The major change to the category of psychosocial hazard involved the introduction of a number of open-ended questions about stressors identified in the literature (e.g., collegial, community agency, administrative, client).

Questions were also augmented. First, using the occupational health research on hospital workers, "mask", "lab coat" and "mouthpiece for CPR" are examples of additions to the check list for personal protective equipment. Procedures for needlestick injuries and for sterilizing equipment were itemized. Immunization against "mumps" and "red measles" was added to the checklist. Handling of human body fluids was specified. Next, using sociological research, questions #39 and #40 were taken from Lowe and Northcott (1986) and questions #43, #44, and #45 were modified from the CUPE Staff Workload Study Questionnaire (Lowe, 1990).

Questions were also reviewed in light of the guiding organizational concepts identified following the reconceptualization of work hazards (discussed in the previous chapter). Because the structural and contextual dimensions of organizations are interdependent, no item was expected to relate to only one dimension. By using the 12 dimensions as a guide, however, there was some basis on which to evaluate the potential contribution of the questionnaire to an organizational analysis. The interview was the principal source of organizational information and development of the interview guide is discussed below.

The questionnaire contained items about written safety policies and procedures, needlestick policies, and committees for workplace health and safety. These were considered to reflect the contextual dimension of goals and strategies as well as the structural dimensions of formalization and standardization. Items on collective bargaining, safety risks, workload, and type and availability of equipment were also considered to reflect goals and strategies. Another contextual dimension, the organization's environment, underpinned questions on government, community agencies, clients, and physicians. The third contextual dimension, organizational technology, was captured by questions on teamwork, ethics, handling of human and animal substances and vaccines, exposure to communicable agents, safety risks, sterilization procedures, exposure to sources of electromagnetic radiation, chemicals, or environmental pollution, workload, clerical stressors, and reproductive hazards.

From the perspective of structural dimensions, demographic information on CHN education and experience related to professionalism and clerical stressors reflected personnel configuration. The hierarchy of authority and centralization dimensions were included by questions on autonomy; administrative, collegial, and Board of Health stressors; facilities, equipment, and maintenance of the physical plant; and availability of personal protective equipment. The Community Health Work Hazards Questionnaire (see Appendix C) evolved from these deletions, additions, and modifications in a form tailored to CHNs and their organizational context.

The questionnaire was divided into two parts and comprised 97 items. Part A contained 73 core questions about perceived work hazards, the dependent variable in quantitative research terms. All questions were grouped under seven headings and sequenced as follows: safety issues; biological hazards; ergonomic hazards; physical hazards; chemical hazards; psychosocial hazards; and reproductive hazards. Potentially sensitive questions were placed close to the end. Part B was informed by Moore (1977) and contained 24 demographic questions. Again, the potentially sensitive items were placed last.

The majority of the 97 questions or items were forced-choice, but 38 required open-ended responses, which I coded, and 8 questions were fill-in-the-blank with numbers. The response format of the 51 closed questions was varied to discourage acquiescent response sets (Batey, 1979). For instance, some questions required a "yes", "no", or "don't know" response while others provided checklists where all applicable responses could be indicated. Yet again, other questions forced respondents to choose between "adequate" or "inadequate" or to indicate frequency of use by checking "daily", "weekly" or "< weekly". Finally, three questions required a choice of integer on a 5-point scale.

The Community Health Work Hazards Questionnaire was self-administered by each respondent. Research supports the reliability and validity of health-related information obtained in a self-administered format. Individual historical information was investigated by Pecoraro et al. (1979) who compared 23 subjects' responses on a self-administered health history questionnaire with their responses two days later for the same, but rearranged questions. On average, there was 90% agreement. When subjects' questionnaire responses were compared with their narrative responses in a traditional physician interview conducted immediately following questionnaire completion, there was 93% agreement on average. In addition, three false negative and two false positive responses per patient questionnaire were discovered during interviews. Gumpel and Mason (1974) took a different perspective and found that self-administered questionnaires provided more information than was available in physicians' clinical notes made from interviews.

Hazardous occupational exposure information was examined by Rosenstock et al. (1984) who used a self-administered occupational health history questionnaire with high risk ($n = 100$) and low risk ($n = 55$) workers and compared the responses with an industrial hygienist's assessment of their risk. Not only did the self-assessment format discriminate between high and low risk workers, but it also correlated strongly ($p < .001$) with the industrial hygienist's assessment for the current or most recent job. Similarly, Baumgarten, Siemiatycki, and Gibbs (1983) obtained 88% agreement between 297 subjects' self-report and government records when focusing on work-related cancer for the prior six years. Concordance between records and responses was highest when subjects reported only one job for the 13 year recall period.

In short, the self-administered format for the Community Health Work Hazards Questionnaire was expected to contribute to the reliability and validity of the data. Problems of recall or misinterpretation were minimized by the focus on the current work situation only and by permitting respondents to clarify questions with the interviewer.

Pretest

The Community Health Work Hazards Questionnaire was pretested on five academic reviewers and 26 community health nurse practitioners. Incorporating ideas from Berg (1989), two separate reviewer guidelines were developed using the corresponding academic and nonacademic titles for the research (Appendix D, Appendix E). Practitioners were asked to indicate the time taken to complete the questionnaire and academics were posed one extra question regarding format and the prevention of acquiescent responses.

Three experts in questionnaire development from the Department of Sociology, University of Alberta, and two experts in community health nursing, one from the Faculty of Health Sciences, McMaster University and one from the Faculty of Nursing, University of Alberta, reviewed the questionnaire. Their suggestions regarding logical consistency, format, wording, and item modification were evaluated and, where suitable, incorporated into the revised questionnaire.

The community health nurse practitioners who agreed to take part in the pretest were all employed by health units that had volunteered to participate in the research, but which had not been included in the study sample. Accordingly, a total of 26 staff and managerial CHNs from a mainly rural health unit, an urban health unit, and one of the two largest health units completed the pretest questionnaire. The pretest sample should be "reasonably representative" (Sheatsley, 1983, p. 226) and this was demonstrable at both individual and organizational levels of complexity.

The pretest respondents averaged 38.9 years of age and had 9.7 years of community health nursing experience. Managerial CHNs[2] constituted 19% of the entirely female sample. Ninety-six percent of the respondents had completed a baccalaureate degree in nursing and 19% had received some education in occupational health. The majority of CHNs worked full-time (73%) and were married or living with a partner (77%).

The organizational characteristics reflected by the pretest sample included: southern geographical location; urban-industrial and rural environments; full-time and part-time work arrangements; and unionized staff. In addition, the inclusion of two district clinics from one of the largest health units provided an opportunity to discern entirely new variables that might otherwise have been overlooked.

As requested, the pretest participants indicated the problematic questions, wrote suggested changes in the margins, and monitored the time expended. On average, they completed the questionnaire in 30 minutes. Their comments and qualifiers for item wording, substantive content, and response options were taken into account during the last revision before data collection was begun.

The final refinement of the questionnaire actually occurred as a result of observations made by the first two study subjects during their interviews. After careful consideration and before the third subject was interviewed, four options were inserted into three of the 97 response sets.[3] No question stems were altered. The insertions reduced the amount of coding needed for the open-ended response options and corrected an omission. At the same time, the instruction for one skip question was tightened. Although I had met with representatives of the pretest sample after questionnaire completion, the need for the inserted options had not surfaced. Moreover, the revisions had not been subjected to a second pretest. Sheatsley (1983) observes that it is a common error to change wording or write new questions and not pretest the new improved draft. The first two subjects in the study sample literally field-tested the revised questionnaire and contributed the final few refinements.

Reliability and Validity

Before data collection was begun, a number of precautions were taken to enhance the reliability of the Community Health Work Hazards Questionnaire. This was considered important in light of the fact that the instrument was being used for the first time to collect data in a study. I also considered doing future research on CHNs with the instrument and wanted to establish beginning reliability and validity for funding sources that would expect it to be addressed because of their positivist orientation. Multiple items were developed under each of the seven headings in Part A. The item order was manipulated so as to place sensitive questions close to the end in both Parts A and B.

Several items were reworded and incorporated into other questions. Within the sections on biological and chemical hazards, for example, alternative forms were used. Items in the sections on safety issues and reproductive hazards were inherently and ineluctably reflective of other hazards: chemical and/or biological, ergonomic, physical, and psychosocial hazards. Finally, pretesting for clarity of instructions and item wording further contributed to the reliability of the data. During self-administration of the questionnaire in the researcher's presence, subjects were free to ask for clarification of items. Generally, the same eight or nine questions provoked requests for clarification or stimulated comments and I was able to standardize my response. At the same time, field notes were made of subjects' comments and were used to assist interpretation of the results during data analysis. For a discussion of the reliability checks after subjects had completed the questionnaire, see Appendix F.

Content validity was established for the questionnaire in previous research using an expert panel (Skillen, 1988). At that time, ten occupational health professionals agreed that the instrument contained the categories of occupational risk (hazards) and that the items identified occupational risk factors. The panel rated all items on a four-point relevance scale (Lynn, 1986). No items received less than 80% reviewer agreement that they were "very relevant and succinct" or "relevant with minor alterations." Further, following modifications to the questionnaire in 1991, the academic experts in community health nursing reviewed the Community Health Work Hazards Questionnaire, checking for appropriateness of the vocabulary for CHNs and the comprehensiveness of item options for community health nursing practice.

One challenge to the validity of a questionnaire is an acquiescent response set (Brink & Wood, 1989). By varying the format of the options, I expected to deter response sets. Also, the standard format of "PLEASE SPECIFY" with all open-ended questions was assumed to deter such responses.

Concurrent or empirical validity was assessed by using the known group technique (Bohrnstedt, 1983). Results were compared with independent measures of validity in the available Canadian, British, and American research data for CHNs. That discussion follows in Chapter Six.

External validity or generalizability was precluded by the use of a nonrandom sample. However, the diversity of the health units involved with the research enabled a circumspect increase in generalizability. Internal validity or consistency was also assessed when I returned to each of the sample health units to conduct the focus groups. The first goal was to present the interpretation of the questionnaire findings for validation and the results are discussed under Focus Group.

Quantitative Data Analysis

The 57 original questionnaires (Parts A and B) and nine repeat questionnaires were processed by the Population Research Laboratory (PRL) in the Department of Sociology at the University of Alberta. Personnel in the PRL entered both the open-ended question responses on the original questionnaires and the comments written in the margins of original and repeat questionnaires into a computer file. After verifying the accuracy and completeness of the data entered, I set aside the comments for the interpretive stage of questionnaire analysis and coded the open-ended responses. Because of the small data set, the initial codes were too numerous to permit a test of significance. As well, several questions had too few responses under "other" to warrant creating separate variables. Subsequently, I streamlined the codes for 22 of the questions. Instead of coding the questions that had just a few open-ended responses (e.g., question 1), a print-out of the responses was retained for the interpretive stage of analysis.

With open-coding completed, the PRL personnel entered all data from the original and repeat questionnaires onto code sheets. When respondents did not use integers for fill-in-the-number questions, the partial number was rounded up. When a range of numbers was given, the average was recorded. Using the SPSSx software package, a program was created and the data entered into the computer. The PRL research technologist visually inspected the entered data first by examining the listings of the records on-line and second, by scrutinizing one complete set of frequency distributions for illegitimate values. After the initial data cleaning, I examined each set of frequency distributions and reviewed all entries on the coding sheets against each original and repeat questionnaire. Subsequently, coding and labelling anomalies were adjusted by the PRL and another set of frequency distributions was run and examined. When satisfied that the data set was clean, I began the analysis of the data using the SPSSx software program. Frequency distributions and descriptive statistics were obtained for a total of

330 variables. Chapters Four and Five present the findings by physical and psychosocial work environments.

Public Documents

Copies of organizational charts and the most recent annual report were requested from each of the five sample organizations. Organizational charts were made readily available by all health units, but were not all current. The years for which four health units provided annual reports ranged from 1985 to 1989. These documents were examined during the ongoing data analysis, but contributed minimally to the conceptualization process.

Interview

Building upon the work hazards that subjects acknowledged during questionnaire completion, semi-structured interviews permitted the discovery and exploration of fundamental patterns or processes among respondents' perceptions of the related organizational factors. In the language of quantitative research, organizational factors were the independent variable. Interviews assist researchers to clarify meanings that subjects attribute to their situation and to objectively document multiple perspectives (Glaser & Strauss, 1967; Hutchinson, 1986). Reality is an interpreted experience defined by respondents through social interaction (Hutchinson, 1986) and intensive interviews allow that experience to be articulated (Lofland & Lofland, 1984).

The individual interviews were used to answer two questions:

> What organizational factors in the work environment underlie the hazards perceived by community health nurses?
> What factors in the external environment of each health unit underlie the hazards that community health nurses perceive in their work environment?

While questionnaires provided the description of CHNs' perceived work hazards, interviews permitted sensitization to the CHNs' social or organizational world (Knafl & Howard, 1986; Schatzman & Strauss, 1973). They provided the opportunity to uncover patterns of experience, clarify and validate observations, and respond spontaneously (Berg, 1989; Nyhlin, 1990). The major purpose of the interviews was to facilitate conceptualization of the organizational determinants of work hazards. Indeed, interviews expanded and further substantiated the data base for conceptualization. Organizational factors first became apparent superficially in the questionnaire data, but in the interviews the nature and importance of certain organizational factors crystallized. The semi-structured interview format was very appropriate given the dearth of available literature on organizational factors and CHN work hazards. However, it was the reconceptualization of the problem of work hazards in organizations that provided the guiding concepts for questioning and probing and created the opportunities for discovery. This is discussed further under Interview Guide.

Interview Structure

A formal, face-to-face interview was conducted individually with each of the 57 participants in the work setting. All but one were interviewed on work time; one CHN volunteered to be interviewed at the end of her work day. Single interviews with a large number of informants provided access to many perspectives on organizational factors. All interviews were recorded on tape with the permission of the respondents[4] and interview tapes were coded with the same number as the subject's questionnaire. Fifty-six interviews were successfully taped, transcribed, and subjected to an in-depth analysis. Recall notes were made on the one interview that failed to record and were subsequently used for insights during data analysis. Excluding questionnaire completion, the majority of interviews lasted 30-40 minutes although eight continued for 50-80 minutes.

Immediately following the interviews, subjects completed the demographic questions in Part B. To ensure accuracy and validity, I initially left the tape recorder running during completion of Part B for the purposes of recording any further comments, but to maximize substantive content, I later changed this practice. By turning off the recorder at the end of the interview and before the subject completed Part B, I gave subjects a natural opportunity to make off-tape comments without having to make an explicit request that the recorder be stopped. These were written in the field notes and used for insights during the analysis.

Interviews were conducted over a total of 14 days between March 18 and June 14, 1991 according to a pre-arranged timetable. Since the sample health units were distributed across the province and CHNs were dispersed within their jurisdictions, a period of consecutive days was negotiated for each organization. In three of the health units, interviews occurred over three successive days and in the other two, they were spread over four days because of the distances I had to travel and unforeseen circumstances. Schedules were arranged to accommodate both participants and interviewer. Subjects had service commitments (e.g., clinics) and were located in central or peripheral offices. I had travel time requirements and had requested that there be two hour intervals between appointments. The interval was to permit one hour per respondent for questionnaire and interview completion, yet allow for reflection and respite between subjects and flexibility for contingencies. It was misconstrued in one agency. Subjects expected to be interviewed for two hours and paced themselves accordingly, despite my review of expectations at the beginning of the interview.

Generally, three or four interviews were conducted per day, although there were three instances of five interviews in one day. All interviews were conducted in privacy with minimal noise and adequate ventilation. Normally, meeting or conference rooms were set aside for my use. This permitted an efficient set-up of equipment and furniture for the interviews. At times, private offices had to be used, requiring flexibility and creativity. Frequently, the subject and I enjoyed coffee during the interview. Whenever possible, the interviewee was seated with her back to the door facing me across a table. By having subjects complete the 73 items in Part A of the questionnaire at the table immediately before the taped interview, I set the stage for a discussion of work hazards, not health status or stress levels, neither of which was the dependent variable of interest.

Interview Guide

A semi-structured format provided flexibility for probing, clarifying, and focussing on organizational themes in the interviews.

To maintain the focus on organizational factors yet permit flexibility in the order, language, and nature of questioning, an interview guide was developed (Appendix G). The initial questions were informed by a number of sources (Berg, 1989; Hinings, Hickson, Pennings, & Schneck, 1974; Laffrey, Loveland-Cherry, & Winkler, 1986; McDaniel, 1987; Segall & Wynd, 1990; Slater, 1990; Wood, Tiedje, & Abraham, 1986; Yonge, 1989) and each was developed to capture information about multiple organizational dimensions. To illustrate, "How do you go about dealing with a work hazard?" was expected to illuminate factors related to the hierarchy of authority, centralization, formalization, complexity, and goals and strategies of the organization. "What access do you have to occupational health services?" was designed to elicit information on professionalism, specialization, formalization, standardization, hierarchy of authority, centralization, size, goals and strategies, and the organization's environment. Further, "What decisions have affected your exposure to hazards?" could capture both positive and negative aspects of goals and strategies, groups in the organization's environment, and organizational technology. Hierarchy of authority, centralization, personnel ratios, and professionalism could surface during the resultant dialogue.

Every interview began with the same question: "Now that you have completed Part A of the questionnaire, were there any work hazards or stressors that were not included?" The question provided an opportunity to validate the comprehensiveness of the questionnaire categories and items and afforded a transition from questionnaire to interview. To complete the transition, a very broad second question was asked: "Tell me about a major work stressor for you during the past year." By the end of data collection in the first organization, however, it had become very clear that, beginning with the second organization, the second question should be changed to: "How concerned are you about your work hazards or stressors as a CHN in this organization?" The process of ongoing data analysis that began with the very first interview is described below under Qualitative Data Analysis.

The second question was replaced for all subsequent interviews for two fundamental reasons: (1) to avoid a social desirability bias in subjects' responses and (2) to capitalize upon the organizational insights of subjects who were not concerned. The decision to change the second question was prompted by two subjects in the first set of interviews who made a point of saying that they did not consider themselves to have work hazards. Their revelations were each made during the course of the interview, not at the beginning, and helped to explain interviews that were uncomfortable and not proceeding well.

By asking subjects at the beginning of the interview about their level of concern, I implied that I *expected* to hear varying levels of concern and encouraged honesty and openness. Consequently, when subjects indicated their lack of concern, my response was positive: "I'm pleased to have the opportunity to interview you because I would like to hear what it is about the organization that makes it possible for you to be not concerned." Only minor changes of wording were needed for subsequent questioning from the interview guide.

Questions were taken from the interview guide for all interviews according to subjects' verbal and nonverbal cues. The sequence in the guide was strictly followed only for the first two questions and eventually the last question. A serendipitous event led to the formulation of the last question just before beginning data collection in the third organization. While viewing a video Business of Paradigms (Barker, 1988), a question was introduced which I selected and modified for use in this study. It became the final question for the remaining 36 interviews: "What is impossible to do in your health unit right now about your work hazards or stressors, but if you could, would dramatically or fundamentally change things?" The question served at least two purposes: it ended the interview on a positive note and introduced an abstract element to a concrete discussion. Since the fourth research question addressed strategies for change, it was appropriate to introduce the imaginative question in the interview and follow it up in the focus groups.

The interview guide itself was changed discriminately on a daily basis in accordance with the ongoing data analysis. Appendix G presents the guide for the first day. Appendix H and Appendix I contain the two guides that were in use by the last day, one for managerial CHNs, the other for staff CHNs. It can be seen that core questions were retained throughout and these are indicated by an asterisk (*). While the symbiosis of the guide and the ongoing data analysis will be discussed in detail under Qualitative Data Analysis, the discussion at this time focusses on the changing structure or nature of the questions rather than on the process of changing.

Subtle changes in wording, not intent, of questions were needed when interviewing staff versus managerial CHNs. For example, "How does being in management in a female-dominated profession have a bearing on your work hazards or stressors" versus "How does the fact that you are in a female-dominated profession have an effect on your work hazards or stressors?"

The broad issue of being in a female-dominated *profession* and a female-dominated health unit *division* was raised in every organization. In contrast, particular issues (e.g., working in small communities, working part-time, or being a mid-manager) were stressed only as they arose. Certain questions (e.g., exposure to WHMIS, access to occupational health services) were addressed initially with interviewees in each organization and then discarded when the facts were known for that entity.

Topics that surfaced and became minor threads in the interviews covered humour, creativity, isolation, uncertainty, discipline, local board backgrounds, management turnover, work cycles, and budget control. They represent organizational factors that were introduced spontaneously by some subjects, pursued by me in subsequent interviews, and ultimately discarded as not fruitful. In fact, they are examples of the inductive and deductive reasoning process that continued while I simultaneously collected and analyzed data. The constant for all questioning was a relevance for the work hazards or stressors of CHNs; the constant for all interviews was the same interviewer.

Interviewer

I conducted all interviews, assuming that my conceptual, interviewing, and communication skills would promote the acquisition of reliable, accurate, thick, and rich data. May (1991) risks stating the obvious when observing that the interviewer's skills are a critical variable in the research process. "The social interaction between interviewer and respondent is the least standardized and probably the most variable aspect of data collection" (Martin, 1983). Moreover, the effective use of self as research instrument is a process similar to fine tuning a musical instrument and requires effort and time (Lipson, 1991).

The interview is a self-conscious, reflective, social performance (Berg, 1989; Goffman, 1959). The interviewer must observe social norms, attend to verbal and nonverbal cues, and encourage openness and honesty. Interviewers must keep the interviewee on topic and deal skillfully with avoidance tactics. Equally important, an interviewer must balance the need for flexibility in questioning, to obtain individual perspectives, with the need for consistency in question content, for making comparisons (May, 1991). Finally, it is essential to sustain the role of researcher, not educator or health professional throughout the interview.[5]

Before data collection began, one of the pretest interviews was submitted, with the subject's permission, to an academic with clinical and theoretical expertise in interviewing skills. Appendix J contains the written evaluation of the interview tape. In an effort to demonstrate excellence in interviewing throughout data collection, I first reviewed transcribed interviews for the interviewing techniques used (e.g., open-ended questions, opportune questions) and continued this self-examination (Field & Morse, 1985) until the last organization. One subject spontaneously critiqued the open-ended format when she said, "your questions are quite open-ended. I find them difficult to answer . . . . Be more specific. Be more specific. Kindly be more specific." Contingent positive feed back (Martin, 1983) was used when observations were on topic and neutral comments were made, followed by a redirecting question, when subjects deviated from the research focus. A personalistic interviewing style and my detailed professional knowledge of CHNs and public health[6] facilitated the development of genuine rapport with subjects.

Pretest

Using the Pretest Review Form (Appendix D), three academic experts (one sociologist and two nurse-educators) reviewed the initial interview questions. A third nurse-educator with expertise in nursing administration reviewed and discussed the questions with me. As a result, new questions were incorporated and wording was refined. When collecting the completed questionnaires in the pretest sample, I interviewed two mid-managerial CHNs using the improved questions and concluded that further modifications were not necessary at that time. A third mid-manager had been scheduled for a verbal review of the interview questions. The discussion was postponed until after data had been collected in the first organization and instead became a validation of the relevance of the questions.

Question sequence was not at issue for the reviewers; they had no comments. During the pretest in the naturalistic setting, I selected questions from the guide as required by the progression and content of the interview. Notwithstanding the written order of the guiding questions, it was the interviewer-interviewee interaction that determined the actual sequence. By taking a semi-structured approach, I could probe for richer, more varied content, pose questions spontaneously, and logically link the questions to respondents' verbalized ideas.

Reliability and Validity

In order to enhance the reliability of the interview data, alternative forms for questions were used at random during data collection, within single interviews. By having subjects articulate responses more than once to the same question in different forms, opportunities to assess the consistency of their perceptions were increased. As well, when verbal responses in the interviews reflected written comments on the questionnaire, the credibility of subjects' perceptions was enhanced.

I met with each group of CHNs before data collection not only to discuss the research, but also to communicate under neutral circumstances and allow potential subjects to assess their level of ease with me. Forthright explanations of the ethical considerations further contributed to the development of trust and willingness to participate. When satisfied that confidentiality will be maintained, subjects are more likely to share valid perceptions (Bond, 1978b; Lipson, 1991). The use of a semi-structured interview format made it easier for the subjects to correct misleading questions or misinterpretations and thus increase the validity of the interview content.

Accurate representation of subjects' verbal contributions was assured when all subjects agreed to be taped, permitting verbatim transcriptions to be used in data analysis. Taped data also ensured more valid crosschecks when the data were juxtaposed with secondary data sources such as organizational charts and annual reports. Finally, field notes on each interview and a daily journal further enhanced the accuracy of the interview data by providing detailed descriptions and reflections.

Qualitative Data Analysis

Data analysis commenced at the same time as data collection. When developing grounded theory, data collection and analysis proceed simultaneously (Corbin, 1986; Field & Morse, 1985; Glaser, 1978; Glaser & Strauss, 1967; Hutchinson, 1986; McCracken, 1988; Stern & Pyles, 1986; Wuest & Stern, 1991). The development of theory from the data is based upon a systematic comparative analysis (Glaser & Strauss, 1967; Glaser, 1978). In this study, constant comparisons were made *within* health units and *between* health units and back and forth with relevant organizational theory.

Within each health unit, the data were collected over successive days. As a consequence, the taped interviews were played back either at the end of the interview or at the end of the day. Running notes were made for leads to be pursued the following day (e.g., atypical or negative cases, new material). When the day's recordings had all been reviewed, I modified the interview questions in accordance with my running notes, field notes, and general impressions. Questioning on the following day thus reflected the beginning analysis, including "puzzlements" (Lofland & Lofland, 1984, p. 62) that had emerged from the tapes, field notes, or journal entries.

From the very first interview, field notes and journal entries were maintained. Field notes were used during every interview to log the time, describe the setting, record process observations, and capture off-tape comments. The journal entries mirrored insights, feelings, and reminders to self. At times, mental or jotted notes had to suffice until time permitted lengthier entries. By continually writing down what is happening, the easily forgotten present is retained for future insights and accurate documentation (Lofland & Lofland, 1984).

When all the data had been collected in each health unit, the cassettes were submitted for processing. An experienced transcriber entered the verbatim interviews directly into a word processing data file which was then converted to a standard ASCII text file. With the text files on diskette, I created a numbered data file in The Ethnograph, a computer software program designed for mechanical management of qualitative data (Seidel, Kjolseth, & Seymour, 1988). Printing from numbered files was time consuming. The number of pages to print out per health unit ranged from 216 (n=8) to 498 (n=12). The printout of the numbered text became the working copy for the analytic process as The Ethnograph format leaves one-half of the page blank for coding purposes.

To ensure the accuracy of the transcribed data, including pauses, laughter, etc., I first proofread each transcription while listening to the cassette. At that time, text corrections were made and margin notes captured voice variations or nonverbal behaviours that were recalled (e.g., "locked gaze with me when I asked this question", "rolled her eyes here"). Margin notes were greatly enhanced by the field note observations. After proofreading, I assessed the interviewing techniques used throughout each transcription, following Field & Morse (1985) and Field (1980). If closed questions or missed opportunities were noted, improved questions were written in the margin as a guide for subsequent interviews. Finally, the entire transcription was reviewed again for the purpose of coding the substance of the subjects' comments using descriptive codes that classified words of text (Miles & Huberman, 1984). Substantive coding is the first level of coding in the process of theory generation (Glaser, 1978).

Initial Theory Development

Substantive Coding

First health unit. Almost every line of transcribed text was coded initially, but it quickly became apparent that coding for organizational factors was more appropriate using multiple sentence segments. The initial coding described the segments, frequently using the language of the subjects to capture what was going on. By using informants' words the preliminary coding stayed close to the data. These codes tend to become the labels in use for the processes that require explanation (Glaser & Strauss, 1967). They are not yet codes constructed by the analyst, but are abstracted from the substantive situation. This first-level coding prevents the researcher from imposing preconceptions on the data, since its substance comes from the data (Hutchinson, 1986).

When substantive coding had been completed for every interview in the first health unit, I assessed the overall adequacy of my questioning by searching for segments in the interviews that could be coded in organizational terms. The transcriptions were reviewed yet again using organizational concepts from Pettigrew (1985), Pfeffer (1981), Mintzberg (1979, 1980, 1981), Mechanic (1962), Kanter, (1977), Hinings et al. (1974), and Sass (1985, 1989). I concluded that regardless of the perspective used (e.g., Pettigrew on content, context, process, vertical and horizontal dimensions; Mechanic on access to information, persons, facilities; Mintzberg on strategy), the substantive content was oriented to an organizational analysis.

In preparation for interviews in the second health unit, the initial codes, journal content, field notations, and interviewing imperfections were reviewed. Next, the interview guide was revised. A balance between flexibility and consistency was achieved in the guide by *systematically* preparing for the second set of interviews. Flexibility was appropriate for exploring new areas, but consistency was required for making comparisons between interviews and between health units (May, 1991).

Subsequent health units. The pattern of proofreading, evaluation of interviewing skills, substantive coding, analyzing, and introducing new questions was repeated for the interviews in each health unit except for the last organization, when only the negative cases and atypical or new instances were coded. A rhythm developed for collecting, coding, and analyzing the data, albeit a rhythm contingent upon the transcriber's ability to meet successive, tight deadlines. Figure 3 presents the schedule for data collection by week. Some interview tapes were more than one hour long, although most lasted 40 minutes or less. Two were extremely difficult for the transcriber because of an unrelenting mechanical hum that appeared on the tape due to building vibration. Overall, the 56 successfully recorded interviews averaged 32 pages of text each. Depending on the health unit, the average per health unit ranged from 21 to 42 pages per subject.

To summarize substantive coding, a helical or spiral method of comparing organization with organization to alter focus and pursue leads accentuated the substantive similarities and differences in patterns among health unit organizations. Constant comparisons among interviews revealed multiple perspectives on each organization and contributed to a thematic tapestry-in-progress of the organizational patterns associated with CHN work hazards and a tapestry that gave organizational concepts in the literature a heretofore unexplored focus. The careful and systematic scrutiny of every interview in each health unit on substantive (and technical) grounds *during* data collection developed the underpinnings for interpretive coding which was the beginning of abstraction.

Interpretive Coding

The process of interpretive coding (Miles & Huberman, 1984) began after the data were collected. The first approach produced very broad and presumed mutually exclusive categories (e.g., "stressor", "ideology", "power"). In a trial run, the selected categories were applied to all interviews in one organization and a sampling from the other four, and were found to be too general and overlapping. Moreover, "power" was not used much and problem areas surfaced (e.g., "strengths", "stressor outcomes"). Upon reflection, it became clear that power, which pervaded all the initial categories, should not be a separate category. Reaching an early impasse, it was necessary to return to the qualitative research literature (e.g., Field & Morse, 1985; Glaser & Strauss, 1967; Glaser, 1978; Hutchinson, 1986; McCracken, 1988; Morse, 1991; Stern, 1980; Werner & Schoepfle, 1987).

The second approach began with questions, on index cards, which had been selected from the review of the literature to guide the initial interpretive coding. These general questions (e.g., "What is going on here?") proved to be simply too broad to stimulate coding precision and were more appropriate for the initial substantive coding stage.

At last, I returned to the research questions. Wanting to know what organizational structures and processes are involved in promoting, reducing, recognizing, and acknowledging work hazards logically led to the use of organizational terminology in the interpretive coding. The literature on organizational theory was reviewed (e.g., Blau & Meyer, 1987; Daft, 1989; Hall, 1986; Hinings et al., 1974; Miner, 1982; Mintzberg, 1980; Pfeffer, 1981). Again, one complete organization was chosen for a trial run. When only eight interviews had been coded, 102 code words had already been developed. A sampling of the other four organizations produced even more code words; they were becoming too numerous to remember. By discarding several and combining others, a modified list of 54 code words (Appendix K) was then tested with one organization and a sampling from the others. With no further changes, the new schema was applied without difficulty to all interviews in the sample. Taking advantage of The Ethnograph capabilities, coding included nesting and overlapping segments seven levels deep. When interpretive coding was complete, the transcriber took over the entry of the codes into The Ethnograph and printed out all nested, overlapped, and single-coded segments by code word for the 56 interviews. Entry of the 54 code words and printing out of all interview segments by code word produced approximately 4000 pages of data. The transcriber took two months to complete the task. This created an enforced period of distancing myself from the interview data and broke theory development into an earlier and later stage. The forced hiatus had repercussions for the validation of theoretical concepts in the already scheduled focus groups and these are discussed below under Structure of the Focus Groups. It also allowed time to reflect on the process of data analysis and to come to the conclusion that the later stage of theory development should integrate the analysis of all quantitative and qualitative data when data collection was complete. The integration of the analysis, including subsequent stages of theory development, is presented in Chapters Six and Seven, although components of the analysis are apparent in the presentation of the findings on hazards in Chapters Four and Five.

Ethical Considerations: Stage One

Ethical Sensitivity

Ethics are fundamental to the integrity of the research process. From inception to dissemination, researchers make ethical commitments not only to their subjects but also to themselves as research instruments, and to the broader social and scholarly community (Bergum, 1991; McCracken, 1988; Vaughan & Sjoberg, 1978). Within the social scientific community, ethical precepts derive from the biomedical model and medical experimentation (Carroll, 1978; Cassell, 1978). But the biomedical model is inadequate for comprehensively addressing ethical issues related to field work in social research (Cassell, 1978). Not just the interaction between subject and researcher, but the publication of the data may have physical, psychological, or social consequences (Bond, 1978a; Duffy, 1985; Strasser, 1991). According to Bond (1978a), the risks may include embarrassment, adverse administrative action, or criminal prosecution, depending on the social groups studied. For Cassell (1978), the risks are also victim-blaming, control of the subjects through policy formulations which avoid more progressive policies, and sanctions at the institutional, governmental, or judicial level. At the intra-personal level, the effects of the interaction on subjects may also extend indefinitely as a result of increased awareness and reflection due to the research experience (Bergum, 1991).

Naturalistic research in the social sciences is emergent in character and "ethical decisions made before entering the field may prove moot" (Lofland & Lofland, 1984, p. 19). Unforeseen situations may arise that require ethical actions. As the research is conducted subjects may ventilate, self-reflect, and self-disclose (May, 1991). In this dynamic subject-researcher interaction, risks to the informants and the solutions to those risks become manifest (Warner & Schoepfle, 1984). In other words, knowledge and relationships change during the process of fieldwork and the data reflect the reciprocal relationship, in contradistinction with the hierarchical relationship common to biomedical research (Cassell, 1978).

By convention, ethical human subject research addresses the issues of informed consent, confidentiality of data, and anonymity of informants. The emergent nature of social research, however, also demands the fullest possible consideration of the potential negative consequences (Cassell, 1978; Lofland & Lofland, 1984). For ethical adequacy, the scholarly imperative to advance knowledge in a field of research must be coterminous with the moral imperative to protect the individual and community. In short, the ethical goal of research is to reveal the truth and protect the informants (Strasser, 1991).

Applied Ethical Sensitivity

An ethical commitment to the self, CHNs, and public health and scholarly communities dictated ethical action at three stages of the research process: before field work; during field work; and after field work. Prior to data collection, the protocol for the research received ethical clearance from the Department of Sociology Ethics Review Committee (Appendix L). A written description of the proposed research (Appendix A) was provided to four levels of community health professionals: staff CHNs; managerial CHNs; CEOs; and Alberta Health nursing consultants. By providing evidence in the research plan of both the research purpose and the measures to protect individual privacy, a relationship between researcher and subjects could be initiated (Bond, 1978a). With the cooperation of the Manager of Community Health Nursing in Alberta Health, communication with the larger public health community (all 27 health units) was facilitated (Appendix A).

Consent in writing was provided by each of the five health units, attesting to the agreement by management and by CHNs that the organization participate in the research. A meeting was held with all CHNs in each of the five organizations to outline straightforwardly the research purposes and procedures, ethical considerations, feedback mechanism (i.e., focus groups and a final written report), and my professional background. The CHNs were informed that participation in the research was strictly voluntary and that subjects could refuse to answer any question, withdraw at any time, and deny permission to record any part of the interview. They were advised that numerical codes would be assigned to the questionnaires and cassette recordings and that the code would be known only to the researcher. Finally, they were told that the data would be presented in aggregate form for the focus groups and final written report for the health units. Time was provided in the meetings for questions and answers. Subsequently, in the absence of the researcher, CHNs decided whether to participate in the study and did their own on-site scheduling of the interviews. Although it was not done initially, I changed my practice for the period just before beginning data collection in each unit to send a letter to the CEOs reiterating the nature of the research and reconfirming the dates for data collection.

When data collection began in the private meeting room arranged by the health unit, I allocated the time needed for the subject to read through the informed consent form (Appendix B) and ask any questions. Each informant was given a copy of the signed consent. Over time, I also developed a preamble. It reviewed the ethical considerations, advised subjects that all real names of people, places, and health units would be deleted from the interview transcription, and explained that the tape recording would be destroyed after the transcription was proofread.

After signing the informed consent form, the subject completed Part A of the questionnaire and I set it aside, at the same time attaching the numerical code. The tape recorder was then turned on for the interview. All subjects consented to be taped and no one requested that the recorder be turned off for any question. Although no subject withdrew from the study, one subject exercised the right to refuse to answer a question. In 2 instances out of 57, unresolved work issues constrained the subjects from dealing broadly with the topic of workplace hazards. In another instance, the subject was extremely guarded and contributed minimally to the data base despite my best efforts to improve the scope of her responses. In one other, it was late in the afternoon and the subject, who was not concerned about her work hazards, provided half an hour for questionnaire completion and the interview. When interviews were completed, the cassette was labelled with the same number as the questionnaire while the subject completed Part B.

Only the transcriber and myself had access to the tape recordings, except for the one pretest tape that was evaluated. The transcriber was not told who were the participating health units or informants. Further, the transcriber signed a code of confidentiality for all interview data (Appendix M) and was given a signed copy. All field notes and journal entries were coded numerically to protect identities and were kept in unlocked storage because of frequent usage. The questionnaires were retained in a locked cabinet until all 57 interviews were completed, but the taped interviews were processed between health units.

If during data collection a subject had described a hazard that I considered to be highly unsafe or unhealthy, I was prepared to verify it with another occupational health specialist and report in immediately to the individual(s) involved. With the individual(s)' permission, I would have then informed the health unit management. Occupational health nursing ethics prescribe that imminent risk to the health or safety of one or more individuals warrants the potential loss of confidentiality. As expected, the situation did not arise.

After the data had been collected in each health unit, the cassettes were submitted to the transcriber. When the transcriptions had been proofread, I destroyed the tape recording and the transcriber erased the files on her computer system. When not being analyzed, the numerically coded transcriptions were retained in a locked cabinet.

After data collection had been completed in all sample health units the 57 questionnaires were submitted for data processing to the Population Research Laboratory (PRL) in the Department of Sociology. The PRL personnel were not informed of health unit or respondent identities and worked only with the numerically coded data.

Finally, I resolved to present only aggregate data in the final report for the health units and was committed to submitting the written report to each of the five sample units in advance of its wider dissemination. In that way, published results would not be made public until the participating health units had received the report.

Focus Group

Background

Lazarsfeld (1955) analyzed the effectiveness of using interviews to judge advertising and Merton, with the assistance of Fiske and Curtis (1955), analyzed bond-purchasing behaviour following a radio broadcast by Kate Smith during World War II. They were evaluating the forerunner of a technique that has been incorporated into research in the social sciences and health care and expanded (Berlamino, 1990; Clement & Grotemeyer, 1990; Cunningham & Frontczak, 1987/1988; Dignan et al., 1990; Gehrt & Pinto, 1990; Henderson, 1990; B.C. Johnson, 1990; Knodel, Chamratrithirong & Debavalya, 1987; Merton, 1987; D.L. Morgan, 1988; Morgan & Spanish, 1984; Stewart & Shamdasani, 1990). Variously known as focus group interviews, focussed interviews, group interviews, depth focus group interviews, and group depth interviews, the technique is commonly called just 'focus groups' (Calder, 1977; Fern, 1982; Goldman & McDonald, 1987; Gordon & Langmaid, 1988; Krueger, 1988; Lofland & Lofland, 1984; D.L. Morgan, 1988; Nelson & Frontczak, 1988; Stewart & Shamdasani, 1990). Market researchers typically use small groups of strangers in artificial settings (D.L. Morgan, 1988; Nelson & Frontczak, 1988), but researchers in the social sciences and health care system have modified the technique (Krueger, 1988). Focus groups now take a variety of forms and are differentiated along the dimensions of group size, goals, inclusion criteria, duration, setting, and control (Calder, 1977; Dignan et al., 1990; Fern, 1982; Knodel et al., 1987; Morgan & Spanish, 1984). Because the focus group as a research method has been subjected to wide application but limited empirical scrutiny (Nelson &

Frontczak, 1988) and because I have not used it previously as a research method, I examined the technique in detail. The literature review contributed to my evaluation of the effectiveness of the focus group. Calder (1977) critically analyzed the use of focus groups from a philosophy of science perspective. In exploratory research, Calder concluded, the only important variable is a focus group moderator with scientific credentials. At the same time, whether they are used in exploratory, clinical, or phenomenological research, focus groups should not be the only method used for data collection. In contrast to Calder's theoretical approach, Fern (1982) empirically tested four common assumptions about focus group methodology regarding the effects of group type, composition, size, and control. Using an experimental design with homogenous subjects in a laboratory setting, he measured the quantity and quality of ideas generated by focus groups. Fern concludes that groups of eight generate more ideas than groups of four, that a moderator does not increase the number of ideas, and that the effect of 'acquaintanceship' or knowing other group members is equivocal. Subsequently, Nelson and Frontczak (1988) empirically tested the effect of acquaintanceship or group composition and demonstrated that "relatively little impact on idea quantity and quality" occurs (p. 46).

The prescriptive literature on focus groups acknowledges a number of disadvantages and advantages (Goldman & McDonald, 1987; Gordon & Langmaid, 1988; Krueger, 1988; D.L. Morgan, 1988; Stewart & Shamdasani, 1990). Focus groups have limited usefulness when informants are not interested in the topic or when the topic is controversial and could lead to conflict (D.L. Morgan, 1988). When artificial settings are used, the results are limited in their generalizability (D.L. Morgan, 1988; Stewart & Shamdasani, 1990). Individuals may be subjected to group pressure or conversely, the group may be dominated by one or two individuals who inhibit an open exchange of ideas (Gordon & Langmaid, 1988; Knodel et al., 1987; D.L. Morgan, 1988; Morgan & Spanish, 1984; Stewart & Shamdasani, 1990). When a frank exchange does occur, the open-ended and idiosyncratic nature of the interaction may make it difficult to interpret and summarize (Stewart & Shamdasani, 1990). On the other hand, minority or opposing opinions may not even be revealed if no sector supports them or if status differences exist within the group (Knodel et al., 1987). The group as a whole may fail to acknowledge basic, taken-for-granted values. Also, researchers who fail to seek other data sources may misjudge the pervasiveness of opinions and run the risk of erroneous conclusions (Knodel et al., 1987). Finally, the moderator may unwittingly contribute to an inferior analysis by losing control of the discussion or by providing verbal and nonverbal cues for desirable responses (Morgan & Spanish, 1984; Stewart & Shamdasani, 1990).

At the same time, focus groups are a quick and direct method for collecting the opinions of a number of individuals within a two hour time frame (Krueger, 1988; D.L. Morgan, 1988; Morgan & Spanish, 1984). They are cost efficient and permit researchers to increase their sample size (Krueger, 1988; Stewart & Shamdasani, 1990). Furthermore, the process allows researchers to not only select the setting, topic, participants, and degree of moderator control, but also to probe, clarify responses, and observe the nonverbal group dynamic (Gordon &

Langmaid, 1988; D.L. Morgan, 1988; Stewart & Shamdasani, 1990). With respect to moderator control, Goldman and McDonald (1987) admonish moderators to assert their authority at least intermittently in order to maximize the informative value of the process. On the other hand, they caution moderators against the inhibition of any developing hierarchy within market research groups, arguing that the hierarchical integration occurring closely approximates those environments in which individuals develop attitudes and make decisions.

From another perspective, focus groups permit the validation of questionnaire or interview data obtained prior to the group discussions (D.L. Morgan, 1988). Indeed, the focus group may be either a confirmatory or exploratory device (Stewart & Shamdasani, 1990). Regardless of purpose, it keeps the researcher closer to social reality, safeguards against excessive abstract theorizing, and provides the opportunity to make constant comparisons between groups according to the analytic method of choice (Glaser, 1978; Glaser & Strauss, 1967). Morgan and Spanish (1984) warn against observing just the issues that groups discuss or drop, however, and advise researchers to distinguish between _important_ and _interesting_ issues with participants.

Focus groups provide participants with advantages which include a degree of control and freedom from one-on-one intimidation. Participants may opt to speak only when they have definite opinions about a topic or are willing to share them openly (Stewart & Shamdasani, 1990). And yet they may be more candid and less intimidated by the researcher in a group setting (Gordon & Langmaid, 1988). Advantages for decision makers in private and public sectors include new insights for program planning (Krueger, 1988). As well, a systematic, organized process of *listening* that permits employees to discuss issues of importance to them, conveys the message that the organization is concerned about their views (Krueger, 1988).

Perhaps most important of all, is the synergism that occurs when individuals respond to the ideas expressed by others in a group. The thoughts of one group member trigger insightful responses in another (Stewart & Shamdasani, 1990). The group dynamic becomes a mechanism for spontaneously exploring a topic to create a unique group product, one which is not achievable using individually oriented methods (Knodel et al., 1987) and one which has the potential to reflect a "collective wisdom" (Krueger, 1988, p. 176).

Rationale for Selection of Focus Group Method

Focus groups were a pragmatic and efficient method for answering the fourth research question: "What are the organizationally oriented strategies that informed community health nurses generate for reducing the hazards they perceive in their work environments?" Collective action is expected to yield more results than individual action with respect to workplace hazards (Dwyer, 1991; Grunberg, 1983; J.V. Johnson, 1989; Parkes, 1990). By capitalizing on the existing organizational structure to explore a neglected area of CHNs' working life, I made efficient use of resources and tapped the creative potential of the group dynamic. As recommended by Calder (1977), I had the scientific credentials to be moderator and I used other sources of data: questionnaires, individual interviews, and public documents. In accordance with Fern's results (1982), all groups had a minimum of eight individuals by virtue of the number of employed CHNs. Although the subjects knew one another, neither Fern (1982) nor Nelson and Frontczak (1988) had demonstrated unequivocally that acquaintanceship of group members was an issue for focus groups.

Informants were interested in the topic and discussed it in their own settings. Having well-developed patterns of communication and interaction, they had the means at their disposal to avoid a conflictual discussion. When one or two individuals dominated the discussion, I had the skills to reduce their control. If individuals were inhibited by diverse statuses or group pressure, that was the social reality of the involved group(s) and inherently a part of any process to resolve work hazards in the involved organization(s). It is within the environment of "hierarchic integration" (Goldman & McDonald, 1987, p. 68) that CHNs must discuss and resolve issues.

The focus groups permitted validation of questionnaire data in a cost efficient manner. Furthermore, the dual facets of the focus group technique as a confirmatory and exploratory research method extended the cost efficiency. In the same two hour period I was able to stimulate the generation of viable ideas for reducing hazards in the work environment. The process kept me closer to the reality experienced by staff and managerial CHNs. Also, the systematic, organized process of listening provided a forum for CHNs to discuss issues affecting more than one organization.

Finally, the exploratory function of focus groups was congruent with the purpose of this research and the confirmatory function contributed to my confidence in the validity of the study findings.

Pretest

Prior to the first focus group discussion, the presentation format was pretested on three staff and managerial CHNs in one of the largest health units. I moderated a discussion of the questionnaire data around a flip chart presentation and made notes throughout. Since every group has its own identity and each group will interact differently with a moderator (Stewart & Shamdasani, 1990), not all aspects of the focus group could be pretested. It was possible, however, to present the questionnaire data during a period of one hour and observe both power differentials and unequal participation rates in a group of three. As a result, the open format of the focus groups was modified to obtain anonymous responses on index cards to three selected questions. The discussion with just three individuals also made evident the need for rapid recording of responses to a flip chart presentation. The quantity of material to be discussed essentially kept me at the side of the flip chart throughout the discussion. Therefore, five inch margins were left on the flip chart sheets that presented questionnaire data. Writing in the wide margin was the most efficient method of capturing the comments made.

Because of the pretest participants' time constraints, the discussion on strategy generation, which was planned for the second hour of the focus group, could not be pretested. Accordingly, the approach to that part of the discussion was field-tested in the first health unit, analyzed for its process and outcomes, and modified for use in the remaining four focus groups.

Structure of the Focus Groups

Unlike the practice in marketing research, the focus groups occurred in work (naturalistic) settings during regularly scheduled staff meetings in groups that had well-established patterns of interpersonal communication. Data collection began on November 6, 1991 and terminated on December 9, 1991 when CHNs in all five sample health units had reviewed the preliminary data analysis and generated strategies for improving the work environment. All CHNs, whether respondents or non-respondents in the first stage of data collection, were asked to participate. Unlike the individual interviews, the focus groups permitted greater control by subjects over the direction and emphasis of the interaction. During the two hour period scheduled for the focus groups[7], I moderated the discussion, but I wanted to achieve a high degree of interaction.

The focus group first served as a validation technique when the analysis of the questionnaire data was presented for the information and reaction of participants. The original intent had been to also validate the theoretical concepts on organizational factors associated with work hazards that evolved during data analysis. This was not possible because of time constraints and the fact that the interpretive codes had not been printed out by the time the scheduled focus groups had begun. Second, the focus group was the mechanism for generating viable strategies to reduce hazards in the work environments of CHNs. This was the termination of data collection. I expect that future research will have an action component based on the suggested strategies. The purpose of this research was to tabulate the strategies generated by CHNs upon their review of both the aggregate data on work hazards and the theoretical concepts evolving from the organizational analysis. Because it was not possible to discuss the theoretical concepts given the level of theory development by that time, the strategies that CHNs generated were not informed by the elements of a theory that emerged later from the data.

The groups varied in composition and in size. In written communication with the managerial CHNs, I had requested that both respondent and nonrespondent CHNs participate. Accordingly, there were individuals present in all five groups who had not participated in the research. The nonrespondent participants variously included the CEO, provincial nursing consultant, contract nurse consultant, recording secretary, and parallel nursing program personnel. The results were five focus groups comprising 10, 12, 13, 16, and 23 individuals. Although researchers do not agree on the optimum focus group size[8], and despite the fact that Stewart and Shamdasani (1990) and Cunningham and Frontczak (1987/88) recommend that group size be confined to between 8 and 12 participants, the larger groups were productive. Having observed with the group of 16 that dyadic talking occurs, I warned the group of 23, who effectively controlled the behaviour and directed comments to the entire group.

Format

I moderated the discussions in each of the five health units. All but one were conducted in their usual conference rooms.[9] Since identical issues were discussed in every focus group, it was appropriate that a moderator be highly involved in order to cover the material and redirect unproductive discussion (D.L. Morgan, 1988). The same preamble and agenda were used for all five health units. While there was consistent presentation of the questionnaire data and the questions to be addressed, there was flexibility in the management of the ensuing interaction.

Prior to each focus group, I reviewed the names of the participants and visually imagined them from short notes so that I could address many discussants by name. This also helped to contextualize comments from CHNs who had not participated in the study. A preamble included an update on the research progress, ethical considerations, and review of the agenda. The agenda was straightforward: (1) to present the identified work hazards for the 57 CHNs by type of hazard, (2) to validate my interpretation of the data, (3) to collect anonymous responses to three questions on index cards, and (4) to stimulate the generation of viable strategies for reducing the identified work hazards. The overall goals were to achieve an objective, lively discussion related to the work hazards and organizational factors inherent to the questionnaire data, and to gain new insights.

The questions to be answered anonymously were as follows:

> Does the cost of the gloves to the health unit
> affect when you decide to use them?
> What is the biggest problem you see here?
> What is the most useful thing you have learned from
> this?

The first question emerged as necessary during the analysis of the questionnaire data. The second and third reflect the wisdom of differentiating important from interesting in market research (Morgan & Spanish, 1984), but were modified to capture perceptions more germane to this social science research and the purpose of generating strategies for change. In the preamble, participants were informed that their answers to the second question would be written for the group to see during a 10 minute break in the presentation. The responses served as a guide, not a rigid structure, for the discussion of strategies during the second hour.

Field-testing of the discussion on strategies had demonstrated the need for a semi-directive approach in order to stimulate discussion. As a result, the following four questions were used to guide participants' thinking:

> What can CHNs do as *caregivers* to reduce their work hazards?
> What can CHNs do as *professionals responsible for other employees* to reduce their work hazards?
> What can CHNs do as *employees in an organization* to reduce their work hazards?
> What can CHNs do as *members of a professional body* to reduce their work hazards?

The questions were informed by the distinctions made during the year that occupational health and safety was emphasized globally by the International Council of Nurses (1988, 1989). At that time, three roles of the nurse were differentiated in order to stimulate awareness of the dimensions of workplace health and safety: the roles of caregiver, manager of personnel, and employee. When developing the guiding questions, I considered it necessary to add a fourth dimension, the location of the nurse within professional organizations, in order to extend the sociological approach.

It was expected that each group would select (from among the aggregate data or responses to question #2) whichever issues were interesting, important, or perhaps safest to discuss. In fact, discussion was thoughtful, serious, and appeared to be influenced by the nature of power differentials. The liveliest discussion occurred in the group of 16, although interest was clearly evident in all groups.

Reliability and Validity

Normally, the face validity of focus groups is high (Krueger, 1988). As a social research method, the discussion reflects the experienced interaction of a homogenous group of individuals. When individuals also know and work with one another, however, their disclosures and discussion may be inhibited (Krueger, 1988), thus posing a challenge to face validity. In this study, two factors counterposed the potential loss of validity.

First, an important function of the focus group was to serve as a validation technique for the questionnaire data, and not as a data collection procedure. If respondents acknowledge the reality described in the focus group presentation as their own, either verbally or anonymously on index cards, the credibility of stage one findings is enhanced. When non-respondents who are present also find the summary presentation and preliminary analysis to be meaningful, the 'fittingness' of the data is enhanced (Yonge & Stewin, 1988). By confirming the meanings intended by the subjects, my interpretation of the first stage data may be seen as more accurate. See the discussion below in Quantitative and Qualitative Data Analysis.

Second, when subjects were ready to generate strategies for change, each focus group continued to address only the aggregate data of the total study sample. Subjects were not informed of their particular unit results, an action which was expected to elicit less defensive, more objective, and valid interactions.

As with individual interviews, the reliability of the focus group was not at issue. The purpose of the focus group was to generate as many practical strategies as possible and not to document those already in existence.

Quantitative and Qualitative Data Analysis

Both written and verbal data from the focus groups were analyzed, including responses of CHNs who had not participated in the first stage of the research. Every focus group had such participants. While they responded verbally, not all submitted responses on index cards. The "Yes" and "No" responses to the first question on the index cards were tabulated. Responses to the second question regarding the biggest problem perceived by focus group participants were tabulated by category of hazard described or by "other" (e.g., under-reporting, lack of knowledge). All responses to the third question about the most useful thing learned from the presentation of the questionnaire data were analyzed and subsequently coded according to three categories: increased awareness of hazards; commonalities among health units; and need for occupational health and safety surveillance.

Although I quickly wrote down as many as possible of the verbal comments made by the participants about the hazard data, I did not code them. Instead, they were woven into the fabric of the discussion of hazards in Chapters Four and Five. No focus group disputed the nature of the hazards described by the data. Rather, participants confirmed the results and sought to provide explanations for them. In so doing, they shed light not only on possible misinterpretations of certain questionnaire items (already discussed earlier in this chapter), but also on the likelihood that under-reporting occurred on the questionnaire due to their lack of awareness at that point in the research process.

After the work hazard data were reviewed, I guided the discussion to the generation of strategies to reduce hazards, and again wrote down as many as possible of their responses. Over 150 "strategies" were verbalized by participants. The format of the discussion took on a brain-storming aspect in contrast to a work group planning session that would develop carefully thought out, detailed strategies for implementation. Because of the nature of this part of the discussion, the quality of strategies varied and they became more like suggestions that needed further development. I coded their responses as "organizationally oriented" and "individually oriented". A discussion and analysis of the results is presented in Chapter Six.

Ethical Considerations: Stage Two

All participants and management were notified early in the research process about the group discussions. The research proposal that was circulated to three levels of health professionals in the health units (Appendix A) indicated my intent to conduct a two hour discussion for the purpose of presenting the preliminary findings and generating strategies for change. As well, the plan to conduct discussion groups was reiterated in the verbal presentations to managerial and staff CHNs, the informed consent forms, and letters to the CEOs and managerial CHNs.

Verbal consent was given by all managerial CHNs when the dates for the focus groups were negotiated. I then confirmed the dates and purpose in writing.

In the preamble to the focus group, I informed participants of the precautions for maintaining confidentiality of the data and emphasized the voluntary nature of participation in the discussion. I reminded subjects that they were to make comments only when and if they desired and that I would single no one out to contribute. All CHNs who were present, whether or not they had participated as subjects during stage one, were invited to express their opinions. They were advised that no individuals and no health units would be identified when the results of the discussions were published.

All focus groups were conducted at the work setting on work time with the consent of management. No session was tape recorded. I made marginal notes regarding the content and process of the focus groups on the flip sheets without attaching names of individuals.

Finally, every effort was made to safeguard the integrity of the participants and their groups. The heterogeneity of the data was expected to facilitate the expression of diversity within each focus group and minimize any threat to the individual. Throughout the discussions, I used neutral, nonjudgmental, and nonconfrontational behaviour. For Goldman and McDonald (1987), the importance of maintaining the psychological integrity of participants is essential even at the risk of leaving them in a state of self-deception. By extension, their idea would apply to the *sociological* integrity of each group of participants. Consequently, no group was given an opportunity to discuss its own identified hazards. All discussion focussed strictly on the aggregate data from the five health units.

Multiple Triangulation

Multiple triangulation enhanced the opportunities for theory building by identifying patterned regularities among the work exposures and organizational dimensions of the sample. At the same time, it provided the opportunity to uncover paradox, contradiction, non-representative cases, or divergence of the data (Duffy, 1987; Jick, 1979). Comparative analysis (Glaser, 1978; Glaser & Strauss, 1967), a general method used throughout multiple triangulation, also provided the foundation for generating elements of a substantive theory that was based on the more coherent understanding of reality resulting from triangulation.

Triangulation is a metaphorical term derived from navigational and military strategists (Mitchell, 1986). It was employed to enhance accuracy and comprehensiveness in the description of CHN work hazards and the generation of conceptual categories for a substantive theory. According to Mitchell (1986), when two or more types of triangulation appear in a single study, the increased complexity is recognized as multiple triangulation. Table 5 presents the use of multiple triangulation in this research by type, focus, and purpose. Of the four types of triangulation commonly described in the literature (i.e., investigator, data source, methodological, and theoretical [Denzin, 1978; Duffy, 1987; Mitchell, 1986; Noblit & Engel, 1991]), three were used in this study.[10] Unit of analysis, another type differentiated by

Knafl and Breitmeyer (1991), was also germane to this research. Theoretical triangulation was employed at several points throughout the research. Methodological, data source, and unit of analysis triangulation were each made explicit for the two stages of data collection.

Theoretical Triangulation

Theoretical sensitivity (Glaser, 1978; Strauss & Corbin, 1990) derives from researchers' professional experiences, analytic processes, and use of theoretical literature. The insights from my professional background (see Footnote 6) and my reading of the disciplinary literatures (sociology, occupational health, public health, and organizational analysis) crystallized the focus of this research. During the initial stages of research development, theoretical triangulation was required for the contextualization and reconceptualization of the problem of work hazards. Beginning with the occupational health literature, I located work hazards within the context of the dominant paradigms, legislation neglecting the health care industry, privatization and downsizing of government services, inadequacies of statistics on work-related disease and injury, and prioritization of research on health care workers. At the same time, I drew upon the public health literature that linked both reproductive risk and the major causes of mortality (heart disease and cancer) to the workplace, stressed the need for healthier environments, called for stronger community health services, and revealed a quantitative bias in the limited research on CHNs' work hazards. By this point, triangulation had brought to light a paradox. The very professional who was to promote public health and healthy environments was neglected as a worker. Turning to the sociological literature provided insights on the social structural factors that have implications for individual worker behaviour, gendered labour divisions, health promotion programs, and occupational health practitioners employed by management, but fewer insights linking structural factors and work hazards in the public sector.

In order to focus on the organizational factors that are associated with the recognition, acknowledgement, reduction, or aggravation of work hazards, it was necessary to reconceptualize the problem of work hazards. This was a significant departure from the occupational health tradition and from the focus of much of the sociological research in the workplace. Organizational theory provided the structural and contextual dimensions of organizations that became the guiding concepts for the review of the substantive literature, development of the questionnaire and interview guide, and conduct of the semi-structured interviews. During the first stage of data collection and analysis, organizational theory provided the means to ensure that the interview data contained organizational information and would contribute to an organizational analysis. Initial interviews were coded using multiple organizational perspectives, confirming that the interview guide did elicit organizationally related information and that transcribed data could be coded in organizational terminology. Theoretical sensitivity is enhanced by continual interaction with the data (Strauss & Corbin, 1990). When data collection terminated, data analysis continued.

Interpretive coding was guided by moving back and forth between the qualitative research literature, organizational theory, and the data. Denzin (1978) describes this iterative activity as the researcher's efforts to construct a theory that is sociologically sound yet realistic to subjects.

When substantive and interpretive coding were complete for the transcribed interview data, continuous reference to the data plus rigorous analytic thinking yielded a basic social structure process (BSSP) (Glaser, 1978), recurring throughout the data. The BSSP that emerged was examined in light of the occupational health literature where a narrower but related concept existed. Data continued to be analyzed with the BSSP as guide. Hutchinson (1986) describes this phase in the analytic process as selective coding. The four categories emerging from this phase and clearly linked with the BSSP were examined in the light of organizational and feminist theory. This process helped to clarify the new contributions to knowledge of this research. In short, the use of theoretical triangulation at critical stages in the research ensured a continued focus on organizational factors and facilitated the emergence of the elements of a theory, a theory grounded in the data, which extended knowledge.

Methodological Triangulation

Researchers who combine methodological strategies must be explicit about their purposes in order to avoid the confusion in the literature arising from the use of the term 'triangulation' (Knafl & Breitmeyer, 1991). In so doing, complementary but discrete applications of the concept are made clear. Because "methods impose certain perspectives on reality" (Berg, 1989, p. 4), three different but complementary data collection methods and the general method of constant comparison (Glaser & Strauss, 1967) were used. Different facets of empirical reality could therefore be revealed (Berg, 1989; Glaser & Strauss, 1967; Strauss & Corbin, 1990). Thus, methodological triangulation permitted different aspects of work hazards to be revealed for an increased understanding of their nature and frequency. Moreover, if meaning is context-dependent (Mishler, 1979), contextual elements provided a greater depth of understanding and a more substantive representation of reality.

Confirmation and Exploration

Traditionally, triangulation refers to the convergent or confirmatory function of methodological pluralism (Israel, Schurman, & House, 1989; Jick, 1979), but contemporary applications of the concept emphasize an exploratory function (Duffy, 1987; Jick, 1979; Knafl & Breitmeyer, 1991). First, the three data collection techniques permitted confirmation of subjects' perceptions about the nature of their work hazards. Closed and open-ended items on the questionnaires established the nature of the hazards and the frequency with which they were perceived. Immediately following self-administration of the questionnaire, subjects were able to confirm meanings and discuss major stressors in more depth during the semi-structured interviews. Interviews provided qualitative and contextual dimensions of the hazards and facilitated rank ordering. Later, when the focus groups examined the aggregate data on subjective perceptions, they confirmed the perceptions of work hazards as well as the interpretations of questionnaire items.

Second, the interviews and focus groups served an even more important exploratory function. Interviews provided the data base for conceptualizing the organizational underpinnings of work hazards. They situated the meaning of hazards within the organizational context. A secondary function of the interviews, useful for the interpretation of questionnaire results and for designing future research, was the additional information they provided regarding the nature or frequency of the perceived exposures (e.g., daily, hourly, weekly). While frequency distributions indicated the number of CHNs who perceived exposure to hazards, few items on the questionnaire had been designed to collect information on the frequency of exposure. This was intentional given the exploratory nature of the research and the incomplete knowledge base upon which to assess frequencies. Another exploratory function was served by focus groups when they provided CHNs with the opportunity to develop strategies for reducing their identified work hazards. Thus, discovery, not verification, was emphasized.

Data Source Triangulation

As a result of triangulating the *sources* of the data in terms of time, space, and person/document, the acquired material provided a more holistic understanding of the area under scrutiny. First and foremost, individual definitions of the situation in questionnaires and interviews were the principal sources of data for the analysis. Firsthand experience of the workplace by employees of the health unit was vital to the research. Documentary analysis (e.g., annual reports) played a very minor role in the corroboration of observations, although it permitted the location of subjective perspectives within the organizational context by considering the organizations' formal structure and public accountability (not all health units published annual reports).

Next, a spatial dimension was included by focussing on (1) the location of the organization in the province and (2) the position of the informants in the organization. Purposive sampling permitted the selection of the autonomous health units from clearly separate regions of the province in order to capture differences arising from urban/rural locations, accessibility to hazard information or consultant services, availability of qualified personnel for recruitment, and opportunities for networking. In addition, purposive sampling ensured that two positions in the organizational hierarchy would be included in the study. Glassner (cited in Wilson, 1983) argues that perceptions of reality may be dependent upon the position that individuals occupy in a social organization. Accordingly, staff and managerial CHNs described and discussed their own work hazards from the perspective of their position in the organization. While managerial CHNs recognized hazards in the physical work environment for staff CHNs, they did not all acknowledge such hazards for themselves.

Third, structured and unstructured temporal events further contributed to a more thorough discussion of work hazards within the organizational context. During the first stage of data collection, subjects completed a comprehensive questionnaire in my presence. Not only did this structured event permit simultaneous clarification of items with me, but it also guided the subject to consider actual or potential workplace hazards in preparation for the focussed semi-structured interview. Further, it captured subjects' perceptions at that point in time.

By completing the questionnaire before an interview locating hazards within the organizational context, individuals increased their level of awareness of the subject, which permitted a more thorough and comprehensive discussion of workplace exposures. Subjects commented that the questionnaire captured hazards which they might have missed. Examples of their comments include: "you . . . covered a lot that I wouldn't have thought of," "you've covered just about everything [laughs]," "it made me think a lot about some of the things I'm not aware of," "that's comprehensive [chuckles]," and "there's a lot of them that I hadn't really thought of."

The second structured event, the focus group, was conducted a minimum of five and maximum of eight months later in the five organizations. This allowed participants to consider the topic more fully using the insights gained during the formal interview. Indeed, participants in the focus group brought a level of sophistication to the discussion which had not always been evident during individual contacts. Their increased sophistication was demonstrated by their use of hazard terminology, their focus on work hazards not nursing practice, and their suggestions for organizational as well as individual approaches to hazard reduction.

Unstructured temporal events that commenced with the presentation of the research proposal and continued throughout data collection could occur indefinitely and advance the breadth and depth of perceptions. Subjects reported that they discussed work hazards among themselves before and after their questionnaire and interview and continued to think about their work hazards subsequently. Bergum (1991) noted in her phenomenological research that talking about their experience made a difference in the lives of her subjects. It raised their level of awareness and led to reflection that perhaps would not have occurred had they not been involved in research. In anticipation of the focus groups, subjects likely renewed their reflection on both intra- and inter-personal levels. Their greater sophistication during the second stage of data collection, whether enhanced by structured and/or unstructured temporal events, only contributed further to my understanding of the challenges in their work environments.

Unit of Analysis Triangulation

When organized groups are studied, the inclusion of more than one level of analysis contributes to a more complete understanding of the phenomenon under scrutiny (Knafl & Breitmeyer, 1991). By incorporating two levels of analysis, I obtained individual definitions of the situation and collective reflections (subunit responses) on the aggregate individual data. Collective discussions addressed both the range and nature of individual perceptions and provided me with an opportunity to hear shared, discrepant, or complementary views. As well, they corroborated some of the themes that had been conceptualized from the individual interview data, although content analysis was still in progress. Finally, unit of analysis triangulation facilitated comparisons across individuals and across organizational subunits.

To conclude, by using multiple triangulation I carefully pursued the ethic of the holistic injunction (Noblit & Engel, 1991). Comparing and contrasting the data using theoretical, methodological, data source, and unit of analysis perspectives, contributed to a more valid interpretation and synthesis of the work world of my subjects with respect to health and safety. In the next two chapters, I present the findings on work hazards and elaborate further on the role of multiple triangulation in differentiating between the hazards in the physical and psychosocial work environments. The differentiation represents the beginning level of analysis for work hazards and leads to the complete discussion and analysis of the hazards in Chapter Six.

Footnotes

1 All percentages are rounded to the closest integer. Due to rounding, totals may not always add up to 100%.

2 Managerial CHNs ranged from assistant supervisor or equivalent to director or manager of Community Health Nursing.

3 "Car seat belt" and "plastic apron" were added to question #1, "human emesis" to question #15, and "bleach" to question #38.

4 A Sony table model cassette recorder with an external microphone or a hand size recorder with an internal microphone and Sony 90 minute chrome dioxide high bias cassette tapes were used for the recordings.

5 I carried key resource materials and articles to all interviews in the first two organizations, prepared to deal with technical questions after the interview was completed. Because no one sought particular assistance, I discontinued the practice. In subsequent interviews, supplementary materials that were not in the original key references appeared to be beneficial for a few subjects and I mailed these to them afterwards.

6 I was a CHN from 1963 to 1973 in Toronto first and later Calgary, a Regional Nursing Officer in the Public Health Service in Colombia, South America from 1973 to 1976, and a CHN/Nurse Practitioner in Northern Alberta and British Columbia from 1979 to 1981. Between 1982 and 1986 I taught community health nursing in the Faculty of Nursing at the University of Alberta.

7 Four focus groups were conducted over a two-hour period. Following the suggestion of a managerial CHN, one focus group was conducted for a three-hour period.

8 Gordon and Langmaid (1988) recommend groups of 7-9 and Knodel et al. (1987) describe groups of 5-10; Goldman and McDonald (1987) suggest that groups should contain less than 12 members and Krueger (1988) prefers 7-10 but no more than 12 participants. In contrast, Dignan et al. (1990) select 20 individuals for a group with a goal to achieving a group size of 12-15 from attrition.

9 One focus group had to find alternative space in a commercial enterprise because of a prior room booking.

10 Investigator triangulation was not used for obvious academic reasons.

Table 1

Criteria for Selection

Dimension	Organizational characteristic
Context	
Environment	Rural Urban[a] Urban-rural mix
Geographical location	Northern Central Southern
Size[b]	< 16 CHNs > 16 CHNs
Structure	
Collective bargaining status	Organized under labour legislation Not organized under labour legislation
Personnel configuration	More full-time CHNs More part-time CHNs

Note.

[a] When the sample was selected, a totally urban health unit was not represented, although one did participate in the pretest.

[b] The dichotomous variable for size was determined after sample selection and represents a natural although arbitrary division.

Table 2

Study Sample Profile by Health Unit

Organizational characteristic	Health unit I	II	III	IV	V
Environment					
Rural					X
Urban[a]					
Urban-rural mix	X	X	X	X	
Geographical location					
Northern	X				
Central		X	X		
Southern				X	X
Size					
< 16 CHNs			X	X	X
> 16 CHNs	X	X			
Collective bargaining status					
Organized under labour legislation		X	X		
Not organized under labour legislation	X			X	X
Personnel configuration					
More full-time CHNs	X	X		X	X
More part-time CHNs			X		

Note.

[a] It was not possible with this sample to represent the organizational characteristic of a totally urban environment.

Table 3

Characteristics of the CHN Sample

Characteristic	%
Age[a]	
≤ 40 years	47
> 40 years	53
Gender	
Female	100
Position in the organization	
Staff CHN	83
Managerial CHN[b]	18
Area for majority of community health nursing	
Urban and rural	54
Rural	26
Urban	19
Employment status	
Full-time	61
Part-time	28
Job-sharing	9
Community health nursing experience[c]	
2-5 years	23
6-10 years	35
11-15 years	19
16-20 years	18
> 20 years	5
Highest level of education	
Baccalaureate degree in nursing[d]	70
RN diploma	14
Post RN diploma in public health nursing[e]	9
Other graduate/undergraduate degree	7
Current enrollment in educational program	16
Union membership	35
Monthly overtime	
Unofficial[f]	80
Official[g]	51

Table 3 continued

Characteristic	%
Marital status	
Married/living with partner	77
Single/divorced/widowed	23
Children living at home	63
Sole breadwinner for the household	25
Annual income[h]	
$10,000 - 19,999	11
$20,000 - 29,999	20
$30,000 - 39,999	48
$40,000 - 49,999	13
$50,000 - 59,999	7
$60,000 or more	2

Note. Percentages do not add up to 100% due to rounding.

[a] n=55. x=41.5 years. sd=7.6.

[b] One subject also had staff responsibilities.

[c] x=10.8 years. sd=6.5.

[d] Two subjects also had another baccalaureate degree.

[e] One subject also had another post RN diploma.

[f] n=55.

[g] n=51.

[h] n=56.

Table 4

Occupational Health Education by Method

Method	Number of responses (*n*=19)	Percentage of CHNs (*n*=57)
Non-credit workshop	3	5
Non-credit course	3	5
Health unit inservice	4	7
Credit course	3	5
Occupational health nursing certificate	3	5
Other	8	14
Basic/post-basic education	4	7
Work experience	4	7

Note. Subjects could indicate more than one method.

Table 5

Multiple Triangulation by Type, Focus, and Purpose

Type of triangulation	Focus	Purpose
Methodological	Self-administered questionnaire	Identify the biological, chemical, ergonomic, physical, safety, psychosocial, and reproductive work hazards perceived by the individual. Determine the sociodemographic characteristics of individuals.
	Semi-structured interview	Conceptualize the intra- and extra-organizational factors associated with individuals' perceived hazards. Validate the comprehensiveness of the questionnaire from the perspective of the individual. Explore a major work stressor from the perspective of the individual.
	Focus group	Validate the aggregate questionnaire results with the organizational subunit (collectivity). Validate the interpretation of questionnaire items using the collective perspective. Explore the collective generation of strategies for reducing perceived work hazards.

Table 5 continued

Type of triangulation	Focus	Purpose
Data source	Space	
	Position of the individual in the organization[a]	Represent perceptions of staff and managerial CHNs of their own work hazards and related organizational factors.
	Location of the organization in the province	Represent perspectives of CHNs in health units selected from across the province.
	Time	
	Data collection stage one	Represent individual perceptions on work hazards in the organization. Conceptualize the underlying organizational factors.
	Data collection stage two	Represent collective perspectives on the aggregated individual perceptions of work hazards. Represent strategies generated by the collectivity for reducing perceived work hazards.
	Person/Document	
	Individual	Represent subjective perspectives.
	Annual report of the organization Organizational chart	Contextualize subjective perspectives

Table 5 continued

Type of triangulation	Focus	Purpose
Unit of analysis	Individual	Represent subjective perspectives on work hazards in the organization. Compare described organizational factors across individuals and conceptualize.
	Organizational subunit	Conceptualize and compare organizational patterns across organizational subunits.
Theoretical	Theory generation	
	Problem statement	Contextualize and clarify the problem.
	Research design	Reconceptualize and explore the problem.
	Data collection and analysis	Conceptualize the emerging organizational factors.
	Elements of a theory	Interpret the conceptualization.

Note.

[a] If the purpose had been to obtain managerial CHNs' perspectives of staff CHNs' work hazards, this focus would have been classified under "person".

Figure 1. Map of the Health Units

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Alberta
CANADA

HEALTH UNITS
1987

COLOURED AREAS DENOTE HEALTH UNITS
● HEALTH UNIT HEADQUARTERS

Produced by the Alberta Bureau of Surveying and Mapping © 1987

Figure 2. Schedule of activities by month.

Activity	1991											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Ethical clearance	X											
Sample selection		X										
Pretest instruments			X									
Presentations to sample[a]		X	X	X	X	X						
Data collection												
Interviews (include questionnaires)			X	X	X	X						
Focus groups											X	X
Data analysis[b]			X	X	X	X	X	X	X	X	X	X

Note.

[a] Presentations to all CHN Administrators and to one of the sample health units were conducted in October and November 1990.

[b] Data analysis continued for six months in 1992.

Figure 3. Schedule for data collection by week.

Activity	Month 1991																			
	Mar		April					May					June					July		
	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Collecting data	X				X				X			X			X					
Proofreading			X	X			X	X		X	X			X				X	X	
Evaluating interview			X	X			X	X		X	X			X						
Substantive coding			X	X			X	X		X	X			X				X	X	
Analyzing			X	X			X	X		X	X			X				X	X	
Preparing			X	X			X	X		X	X			X						

CHAPTER 4: HAZARDS IN THE PHYSICAL WORK ENVIRONMENT

Community health nurses (CHNs) perceived hazards in both their physical and psychosocial work environments. In order to reflect the relative importance of specific work hazards, the interrelatedness of physical and psychosocial work environments, and the organizational underpinnings of work hazards in both environments, the next two chapters are written as a set. The pair of chapters present findings for the first three research questions:

> What are the actual or potential biological, chemical, ergonomic, physical, psychosocial, reproductive, and safety hazards that community health nurses perceive in their work environments?
> What organizational factors in their work environments underlie the hazards perceived by community health nurses?
> What factors in the external environment of each health unit underlie the hazards that community health nurses perceive in their work environments?

Since employees in the community-based health care system have not undergone a comprehensive assessment of their work hazards, this exploratory description of CHN work hazards is central to the presentation of findings. Moreover, the sample of health units was selected to include organizational differences in order to capture the diversity of hazards associated with organizational factors (as well as the range of organizational factors underlying work hazards). Consequently, the organizing framework for the two chapters of the set derives from the identifiable patterns among the *aggregate* data on the nature and relative importance of work hazards for the 57 subjects. Chapter Four is a presentation of the discounted, secondary, and significant hazards in CHNs' physical work environments within the organizational context. It serves as an introduction to the organizational factors in health units that are associated with CHNs' work hazards and identifies hazards that have been ignored in CHN research. Chapter Five concentrates on the hazards that participants report as the *most* significant, the hazards in their psychosocial work environments. It provides clear evidence of the multiple factors in health unit organizations that underlie subjects' work hazards. The data on hazards are first presented in this set of chapters and then discussed and analyzed in the context of the substantive and theoretical literature review in Chapter Six.

Multiple Triangulation

Confirmation and Exploration

Multiple triangulation, as outlined in Chapter Three, yielded convergence on the nature of the hazards that subjects perceived in their physical work environments and revealed the relative importance that they attribute to those hazards. *Methodological* triangulation permitted different aspects of the hazards in the physical environment to be revealed. Questionnaires established the nature of the hazards and the frequencies with which they were perceived were similar. Interviews provided the qualitative and contextual dimensions and facilitated rank ordering. Focus groups confirmed the nature and rank ordering of hazards in the physical environment. *Data source* triangulation enhanced the description of these hazards and the organizational factors associated with them. Managerial CHNs provided important insights on the organizational considerations. Subjects located in five different regions of the province enhanced the comprehensiveness of data on hazards and made manifest the similarities and differences among their operational conditions. *Unit of analysis* triangulation demonstrated a divergence in the rank ordering of two categories of hazards (discussed in Chapter Six). While perceptions of CHNs are the basis of the data, multiple triangulation enhanced the comprehensiveness, captured varied organizational factors associated with work hazards, and permitted a hierarchical arrangement of hazards according to subjects' perceptions.

Rank Order of Hazards in the Physical Work Environment

Discounted Hazards

Discounted hazards are those which subjects duly considered and either dismissed or minimized as important hazards. Subjective assessments by staff and managerial CHNs indicate no serious concern about chemical hazards or negative reproductive outcomes associated with their occupational exposures. Not one subject raised the issue of chemical or reproductive hazards during the interviews. When 66 individuals answered the question "What is the biggest problem here?" anonymously on index cards in the focus groups, only one participant selected reproductive hazards and not one indicated chemical hazards.[1] Based on the responses to the closed and open-ended questions on the questionnaire, chemical and reproductive hazards appear to be either minor or non-issues for CHNs. Nonetheless, the chemical hazard category and the composite reproductive hazard merit consideration for what is identified and what cannot yet be determined.

Chemical Hazards

No CHN reported exposure to ethylene oxide, anaesthetic gases, antineoplastic drugs, acids, phenols, PCBs, lead, or nickel. Eighteen (32%) indicated exposure to tobacco smoke. Despite non-smoking policies in the health units, the public nature of CHNs' work in homes, schools, trade fairs, etc. precludes total avoidance of tobacco smoke. Furthermore, while the exposure was minimized in health unit buildings where CHNs provide direct client services or conduct client-related activities, it was not avoided entirely. As one CHN explained, "our office is non-smoking, but that doesn't control the rest of the building [and] the air is recirculated." Noncompliance with policies and sharing of the building with organizations or cafeteria services that do not have smoking restrictions provide opportunities for exposure.

Five CHNs (9%) admitted that they did not know what their chemical exposures are. However, 50 CHNs (90%) indicated some contact with chemicals at work. Of those, 44 use alcohol and 27 use bleach for disinfection purposes. Only four CHNs specifically acknowledged using gloves for protection when disinfecting surfaces or equipment and just one reported problems with a skin rash from using alcohol skin preps. Seven CHNs indicated exposure to mercury from damaged equipment and five reported exposure to solvents for cleaning or slide preparation. One queried exposure to asbestos. One or two individuals each indicated contact with any one of the following chemicals: alkalies, ammonia, formaldehyde, hexachlorophene, ketones, and talc. These have apparently been used as cleansers, disinfectants, fixatives, and lubricants for applying gloves. In the event of an unforeseen splash of chemical or other contraindicated exposure requiring quick removal, two of the five health units have shower facilities.

A potential source of chemical exposure can be found in photocopiers. Fifty-four CHNs (95%) reported using photocopiers at work. Twenty-nine reported daily use, 18 indicated weekly use, and seven reported less than weekly use.

During the semi-structured interviews, CHNs were asked about their exposure to the Workplace Hazardous Materials Information System (WHMIS). The nation-wide hazard communication system was legislated federally in 1987 and provincially in 1989 to deal primarily with hazardous chemical exposures. The legislation addressed the right of employees to be informed about the nature and control of hazardous materials at work by means of comprehensive labelling, material safety data sheets (MSDSs), and employee education (Moser, 1987; Smith, 1988). The first phase of WHMIS was designed to increase awareness about six classes of controlled hazardous materials;[2] the second phase was to be more encompassing ("WHMIS II", 1990).

Two of the five health units informed employees about WHMIS through inservice and/or orientation programs which included video presentations, handouts, and appropriately labelled on-site materials. The remaining three health units did not introduce their CHN employees to WHMIS. Among the informed subjects, one quickly responded to questioning with, "Oh yeah, we had a workshop and there's posters around." Others made comments such as: "WHMIS was probably one of my first . . . specific orientations to a safety concern";[3] "when we looked at the label we knew what the product was"; "we were more conscientious about the disinfectants we use"; and "it's just much more organized than it used to be." By contrast, several CHNs made the following comments: "we had an inservice on it, I think"; "we have our hazardous product book and all that . . . it's in the waiting room, I think"; "I know the term and I know sort of what it means"; "I'm not sure exactly what the letters stand for but . . . hazards control and . . . it's with . . . disposal of the products"; and "other than the initial orientation, I haven't heard a whole lot about WHMIS around here." Among the uninformed employees were several CHNs who became aware of WHMIS because of knowledgeable spouses, work experience in the hospital, membership on an environmental health committee, a post-basic degree course practicum, or teaching vocational students. At the same time, other CHNs employed in those units typically made comments such as: "this is completely foreign to me. I've never heard of this before"; "I don't know what it is"; "[exposure] to *what*?"; and "I've never heard of it. What is it?"

Reproductive Hazards

Not one of the 57 CHNs indicated personal experience with congenital defects, childhood cancer, neonatal death, spontaneous abortion, or stillbirth as a result of work. Fifty-six had no concern that they might. Fifty-one (90%) had no concerns about carrying hazardous agents or substances home on their clothing. No CHN believed that infertility might result from her work exposures. Fifty-four (95%) did not consider themselves at risk for work-related menstrual problems and 52 perceived no risk for problems with libido because of work. Fifty-three did not consider there to be a risk for breastfeeding as a CHN. Finally, 50 CHNs (89%) perceived no other reproductive hazards, while six CHNs indicated biological, ergonomic, or physical factors as potential reproductive hazards.

Secondary Hazards

Whereas chemical and reproductive hazards were discounted by the study sample, CHNs acknowledged or recognized biological and ergonomic hazards. Given the number of CHNs who addressed them, they were subordinate or minor in comparison with other hazards. During the interviews, seven CHNs raised the issue of exposures to biological hazards, and one referred to ergonomic hazards. In the focus groups, two participants selected biological hazards and another two selected ergonomic hazards as the biggest problem to be addressed. While open-ended and closed items on the questionnaire revealed that biological and ergonomic hazards were commonplace and well-recognized, the integration of results using triangulation made it clear that biological and ergonomic hazards were considered secondary to the more important physical and safety hazards.

Biological Hazards

Almost all subjects indicated that they handle vaccines (95%) and were exposed to human body fluids or wastes (97%). Less than eight percent reported dealing with dead or live animals.[4] According to one CHN, "We are exposed to a lot of body fluids and especially blood." Forty-eight CHNs (84%) identified exposure to human blood. "They [injection sites] often bleed," commented one CHN. Another explained, "I was really made to feel I was being stupid and . . . that this was really dumb because, you know, 'These kids don't bleed'. Well they do bleed and I don't know if they have AIDS or not or I don't know if they have hepatitis." And yet one subject remarked, "You're exposed to blood, exposed to blood when we immunize people. It is an extremely small amount of blood . . . . you use barriers as in cotton ball, something so that you don't touch the blood." If taking blood samples, the potential for exposure is greater. Between 28 and 32 subjects handle human emesis, faeces, sputum, or urine. Although 5 CHNs did not know to what communicable agents they had been exposed during the past year, 43 CHNs (77%) specified viruses, 37 (66%) and 35, respectively, indicated bacteria and parasites, 13 (23%) specified fungi, and 6 identified chlamydiae.

Subjects revealed immunity to a number of communicable agents. Everyone reported immunity to polio. Fifty-six CHNs indicated immunity to diphtheria, tetanus, and rubella. Fifty-four and 50 CHNs, respectively, reported immunity to red measles and mumps. Thirty-one subjects (54%) specified immunity to hepatitis B. One CHN explained the reduced immunity to hepatitis B virus as, "being told really that it's [HBV] not a risk and don't worry about it and it's too expensive and you're not really worth it [laughs]." Twenty-eight subjects (49%) reported protection against tuberculosis, and five (9%) indicated that they had been immunized against rabies. Three of the five health units underwrote the cost of Hepatitis B vaccine for their CHNs. A CHN reported, "It's about a hundred dollars for the series of three." One health unit reported a program to monitor staff immunization and another encouraged vulnerable CHNs to consider active immunization against rabies.

A common route of entry for microorganisms is by inhalation from aerosol (airborne) contamination. This is discussed further under physical hazards. Another route of entry for communicable agents is by needlestick. Thirty-one CHNs (54%) disclosed that they had had a needlestick injury as a CHN, 10 in the past year, while 26 indicated that they had never had a needlestick injury in community health nursing. Three injuries with a sterile (unused) needle were among those reported. Of the 31 CHNs who reported this type of injury, 10 CHNs informed a supervisor and one notified the medical officer of health. One explained, "The first time I got stuck with a needlestick they [management] said 'Fine. Don't worry about it'." Four completed a WCB report and another four filed an incident report. Three obtained the client history and one obtained a blood sample from the client for HBV testing. Although 8 (14%) did not know if the health unit had a needlestick policy, 42 (74%) reported that there was a policy. With respect to the prevention of needlestick injuries, 53 of the 54 CHNs who handle vaccines reported the procedures they followed for handling used needles. No one broke the needle or removed the needle from the syringe. Thirty-nine (74%) did not resheath the used needle and 14 (26%) did resheath. All but one disposed of the needle and syringe in special (sharps) containers.

Of the 40 CHNs who reported that they use gloves, 3 used them for giving injections, 10 for injecting if they had broken skin on their hands, 10 if examining for communicable disease, and 23 for handling blood.

Ergonomic Hazards

Subjects indicated that they transported heavy loads, used uncomfortable positions or repetitive movements, and had to adjust to uncomfortable furniture and equipment. Fifty CHNs (88%)[5] reported that their work required them to carry heavy equipment or materials. Of those, 47 respondents specified what they perceived as heavy. Figure 4 displays the nature of the equipment or materials by the number and percentage of CHNs reporting. Respondents in all five health units reported using suitcases for carrying paper stocks, medical supplies, immunization materials, and reference manuals to sub-offices, schools, outlying areas, and out-of-town clinics. One CHN explained, "We do have a cart but then the cart too is heavy lifting it in and out of your car." Subjects routinely carried baby weigh scales (some weighing 30 pounds) to urban and rural homes and occasionally transported audiovisual equipment (e.g., film projector, video machine, overhead projector) as well as educational displays and panels to schools and community functions (e.g., trade fairs). According to one CHN, "I've heard horror stories of community health nurses hiking across the prairies with their baby scale under one arm and their briefcase under the other." Although some respondents reported that record-keeping systems were changing or becoming computerized and others made use of the labour of aides or assistants, some CHNs indicated that they transport records and files to the schools and outlying areas. In addition, they reported carrying vision-testing equipment and audiometers (if speech pathologists have not taken over the hearing tests) to the schools. Within health unit buildings, CHNs reported moving furniture around for meetings or prenatal classes, negotiating stairs with heavy loads, and going up and down stairs in order to complete tasks. As one subject explained, "a lot of running up and down stairs . . . . everything isn't really localized for you so it means a lot of extra steps." Another stated, "I think we've got to have ways of protecting our backs from heavy lifting and carrying supplies."

Twenty-seven CHNs (47%) perceived that their work required the use of uncomfortable positions and/or repetitive movements. Sixty-three percent of those respondents implicated the positions and movements used in providing direct services to clients in homes, schools, and clinics. Subjects described bending, kneeling, and twisting when immunizing infants and children, checking for head lice, or weighing babies. They reported using repetitive head movements when screening the hearing and vision of children or completing telephone work, and described prolonged sitting and standing while conducting well baby clinics or classroom checks for lice infestations. "Clinic can be so draining . . . . It just kills me. I think I'm going to go back on half days. I'm going to split my clinic day . . . . It just kills me to be struggling with kids all day even though I like them," remarked one subject. Forty-one percent of the 27 CHNs described uncomfortable positions or movements while performing service-related activities at the computer, desk, telephone, and in their vehicle. The prolonged sitting in vehicles received special mention because of the poor lumbar support, condition of the roads, vibration, frequency (may be daily), or duration (may be two hours one way).

Sixteen CHNs described uncomfortable furniture or equipment, principally chairs. Swivel chairs, chairs that are too high, and chairs without back support in meeting rooms were specified. As well, CHNs singled out clinic rooms (left-handed versus right-handed set ups), computer stations, work spaces (tight), and equipment (height of tables, lab benches, sinks, garbage pails).

Significant Hazards

Although subjects acknowledged biological and ergonomic hazards, physical and safety hazards emerged as significant concerns in the questionnaire, interview, and focus group data. They were reported by a substantial number of respondents. While questionnaire items captured the nature and frequency of these hazards, the interviews provided the opportunity to ascertain their significance for CHNs in the sample. Subjects usually decided which hazards if any were raised for discussion in the interviews. In four of the health units, safety hazards were raised more often than physical hazards. In the fifth health unit, both were addressed equally. Overall, 29% of the interview subjects discussed concerns about physical hazards and close to one-half (46%) reported dealing with safety hazards. The anonymous index card responses of focus group participants confirmed that safety was the more important of the two issues. Safety hazards were chosen as the biggest hazard four times more often than physical hazards.

As discussed in Chapter Two, physical hazards are a single category of hazard. They derive from multiple energy sources in the workplace that produce noise, radiation, thermal conditions, vibration, pressure extremes, illumination, and electricity among others. In contrast, safety refers to not one category of hazard, but all categories. Safety is a composite hazard that may be created by one or more of the five commonly used categories of hazard. Hazards to safety are generally considered to be a threat to the physical (external) integrity of the body.

Physical Hazards

Forty-four CHNs (77%) described exposure to one or more physical hazards. Figure 5 displays the more frequently identified ambiental exposures. Excessive cold was the exposure reported most often. Although CHNs referred to inclement weather when making rural and urban home visits, they also perceived excessive cold to be a problem inside their buildings, in both upper and lower level offices. In the words of one CHN, "the heat/cold thing here has been a problem all winter. You could hardly sit in parts of the building . . . you could hardly write, your hands were so cold." In another health unit, a CHN explained:

> This last time I went right, I just complained directly to [administrator] and this is enough. I mean [colleague] has been sitting in her office with her coat on for two days . . . 'cause she couldn't write . . . baby clinic day and the temperature's at fifty-two.

In a third health unit, a subject remarked, "and there's always . . . people running around looking for heaters to put under their desk."

In contrast to the reports about cold temperatures, the 44% who identified excessive heat (e.g., temperatures of 33 degrees Celsius) concentrated on the exposures inside buildings. They attributed the heat to inadequate air conditioning systems, energy conservation during evening prenatal classes, or attempts to counteract the cold in other areas of the building. The following are typical comments: "this building is so hot"; "the heat bothers us so . . . and even clients complain about it"; "if we turn the heat down, the girls at the front freeze"; "you feel the heat in here and there's not much you can do about it without freezing out the rest of the side of the building"; and "you get four prenatal classes in a row complaining bitterly about the moms ready to pass out on the floor because she [*sic*] can't stand the heat in the building in the evening." Introducing another viewpoint, a subject stated, "If we're renting the building, we shouldn't have to pay for the [new] air conditioner."

While half of the respondents considered low humidity to be a problem, almost two-thirds reported an absence of air quality monitoring programs in their buildings and perceived both ventilation and air quality to be inadequate. Indeed, more than one CHN aspired to "punch a hole" in the sealed windows. "If I could just open these windows," wished one subject. Respondents implicated reduced fresh air intake and recirculated air contaminated with vehicle exhaust, tobacco smoke, or industrial pollution. Comments such as: "I think the air is being recirculated"; "we feel there is something in the air system because we often have, I really get nasal congestion"; "we have no fresh air intake for this building . . . it was deliberately plugged because they were having problems with heating and cooling"; and "the cafeteria simply sucks up the air from all the smokers and circulates it around to everybody in the building" exemplified the perceptions of CHNs in the sample. Even when episodic monitoring was conducted, "standards are set for industry" and CHNs were told their building ventilation or air quality was adequate.

Several subjects discussed a suspected association between the poor air quality and ventilation and the rate of sickness among staff. They described a rapid transmission and frequency of (airborne) respiratory illnesses as well as a high incidence of headaches. Comments included: "I get as many or more flus here as I ever did in hospital"; "every winter we really have a lot of sick people in this place"; "we did a survey of how many people get headaches and it was very, very high in this building"; and "it [a cold] just travels real quick."

To a lesser extent, subjects reported excessive exposure to noise and dust, but over one-third of the sample still expressed concern. They attributed their noisy environments to well baby clinics, telephones and facsimile machines, photocopiers and printers, laminators, paper shredders, dental offices, faulty light fixtures, ventilation systems, office-sharing, vehicles, furnaces, clocks, and loudspeaker systems in the schools. They attributed exposure to excessive dust to travel on dirt roads and inadequate cleaning of offices and washrooms. The following comments represent the range of complaints. "It was a major ordeal . . . to get the carpets shampooed", "years and my venetian blinds have never been washed", and "there were dustballs, dustballs in the bathroom on the floor." One subject summed it up. "There's a very, very low quality of cleanliness in this building."

Finally, 12 subjects reported exposure to building and vehicle vibration, 11 to cramped workspaces, and 10 to lighting which created glare, was too bright, or could not be adjusted. Examples of comments include: "The furnace is a noisy old furnace and it always makes vibrations and sounds sometimes so loud that you wonder is the thing going to explode"; "my office shakes and my desk rattles and when my desk rattles, it gets noisy"; "we're on top of each other. There's no place to have a private conversation"; "I've just listened to the other nurses and I understand, I mean, that they are crowded and they've got stairs and, and here we're not crowded. We don't have stairs to deal with"; and "the humming . . . . You know when they're [fluorescent lights] not working properly they can hum." No one identified exposure to radiation. However, the equipment that CHNs use is potentially a source of non-ionizing and very low frequency radiation. One-third of the sample reported using video display terminals (VDTs), but the majority worked at VDTs less than weekly. Four or less subjects reported using microwaves or laser equipment (printer).

Safety Hazards

Fifty-five CHNs (97%) perceived risks to their safety. Figure 6 displays the safety hazards associated by CHNs with their work. Dogs on client property were the most frequently identified hazard by respondents who described one dog bite injury as well as preventive strategies-in-use. For example: "really careful about dogs [laughs]"; "I sit in the car until I know that there's someone calling the dog . . . I open the door slowly"; "until they [clients] notice I'm there and called off the dogs, I don't want to take a chance"; or "I've schooled myself to step out . . . to not quaver, to talk to them in a low voice, and just proceed in the direction that I'm heading."

Comments ranged from "a dog in the yard would be . . . something that everyone should know, but that's a severe hazard for anyone having to go into a farmyard"; "every farm has these large dogs that greet you at the door and you're never quite sure if they're friendly . . . I hate the dogs [chuckles]"; to "I don't trust any dog. Period." As noted previously, five of the 57 CHNs had received rabies vaccine. One subject wondered, "in community health, you're talking about some very vague things. Like dogs attacking you in farm yards, you know, like whose control is that under?"

Travel on country roads was another hazard identified frequently by subjects. "One of the bigger hazards would be the fact we're out on the road"; "I think the things that concern me probably more about work hazards are, is the amount of driving that I do"; "one of the major hazards of working in community health is that. You are on the road so much"; and "I probably spend two hours a day driving" or "it's easy for me to put two hundred kilometres on easy in a day." Their concerns also included proper maintenance of vehicles, inclement weather, road conditions (e.g., mud, ice), driving ability, availability of survival gear and winter wear, isolation, vulnerability, and lack of cellular phones. One CHN reported:

> We have asked for . . . cellular phones in the vehicles . . . . I don't know where it's gone . . . . not that a cellular phone would be of any help to you on occasion, but because we visit a lot of people in very questionable home environments.

At least one health unit purchased the vehicles and issued them to CHNs "with a schedule so if your car isn't properly maintained - it's really on your shoulders . . . . You're given the instructions as to what you need in your car for . . . road-side emergencies . . . They certainly will issue it to you if it's not there." At the same time, a subject remarked, "I have a right to expect a good vehicle to drive if I'm driving a health unit vehicle." On the other hand, a subject reported, "We all used to have health unit vehicles, but a few years ago they took them out and they pay us a car allowance now . . . . So quite possibly we're not as well looked after whereas the health inspectors do get their company cars . . . . the theory is that they do a lot more travel than we do . . . . They also have the ear of [CEO] more than we do . . . . [whispers] Because they're men [laughs]."

Road conditions and isolation increase the hazards. One CHN explained, "we travel in all kinds of road conditions, all kind [sic] of weather." According to another, "I have a very remote area and I have a very, very large area and it's geographically isolated." Others stated: "community health nurses do a lot of driving"; "almost all my baby visits are out in the country"; and "if I could change the driving conditions . . . and the roads that I travel . . ." Similarly, other respondents remarked, "I have concerns about the rural driving, being on the highway"; "you're out on those roads without . . . [a] cellular phone in the car"; and "we want . . . to have at least one car with a telephone in it." Introducing another aspect of isolation, a CHN described a motor vehicle accident "that took place way, way out in the country on rural roads" and another respondent related, "we had a nurse that rolled a truck a few years ago. She was diabetic and she was left in the ditch for over an hour." Even the problem of obtaining clear directions for home visits was raised. "It was very vague description, you know, the green cattle-guard past the two group [sic] of two trees."

The majority of respondents also indicated concern about urban car travel. A subject observed, "I have to be just as cautious when I drive down the street as I do handling some contaminated faeces in a hospital setting." As well, subjects described unsafe conditions on the parking lots for their office buildings. "Our parking lot was a major hazard, not only to us but to clients"; "I'm at more of a risk falling in the parking lot than being attacked by a client or a needlestick injury"; "if you walked out there even today, you'll see a sheath of ice right across it"; and "I just think someone should be overseeing that all the time", represent aspects of the problem. Other remarks included: "we have no lights in [the] parking lot there" and "there's a big field, lots of bush around it and you would be leaving there after teaching something like prenatal in the middle of winter at ten or so at night and you'd be the only one in the building. You'd be locking up the building. You would be going out to your car in a dark parking lot."

Working after-hours, in unsupervised buildings, or at sites without access to a telephone was perceived as a risk by 30% or more of the respondents. They described incidents where non-clients entered buildings. As one CHN stated, "I don't like being alone in a building where you're vulnerable to whoever walks through the door." As another remarked, "the thing that concerns me is going into rural areas or clinics outside the main office." Others faced the hazard of being confronted by intoxicated intruders or having to leave the building in order to call for assistance. One CHN explained that it was a "really,

really serious problem but the men don't think of it that way. They don't see it as a problem."

Over 50% of respondents identified client verbal or physical abuse as a potential if not actual hazard. For example, CHNs informed, "[you] usually get the verbal violence first, and then you, then you get your cue to leave [chuckles]" and "I was chased out of the house and verbally abused." Another CHN reported, "we work in the schools. We need a safe environment to work . . . . We need protection from abuse in the schools . . . . It's a potential risk." According to another, "I guess you can be assaulted anywhere even in community health." Still others explained, "out of the building when you are going into homes, sometimes you are pretty vulnerable. You're a female and you're alone. Pretty vulnerable" and "you're out in the boonies. And you walk into some pretty scary situations. Like you think . . . I don't want to be here right now, but you are." Even when others were around, CHNs reported abuse by clients. As an example, subjects reported verbal abuse and assault in well baby clinic, precautions required for a sexually transmitted disease clinic, and sexual innuendo from both young and old males. Between four and six subjects reported concern about safety when in inner-city areas because of groups, individuals, or the physical environment.

A total of 17 subjects reported sustaining work injuries, including needlesticks (9),[6] motor vehicle accidents (4), injuries from equipment (2), unspecified injuries (2), a dog bite, and an assault by a client (who was subsequently charged through legal channels). Four subjects indicated two injuries each. For an example of an accident where a

Workers' Compensation Board (WCB) accident report was considered, a subject reported, "a nurse fell off a step stool the other day and fell onto the fax machine." To illustrate motor vehicle accidents, another reported, "we do have . . . on record . . . a couple of situations where we've had a vehicle roll over." Eight (47%) completed WCB accident reports.

Table 6 presents self-protective behaviours indicated by CHNs. An attitude that one CHN verbalized is, "my life and my personal health is worth more than risking my life for this job." All 57 subjects identified the use of at least one piece of personal protective equipment. Fifty-six subjects had taken at least one safety-oriented course. One-third of the sample took defensive driving courses and just under one-fifth took self-protection courses. These were the only safety-oriented courses that focussed on protection of the CHN rather than client-centred nursing practice.

The most prevalent form of self-protection used by CHNs was the car seat belt, followed by surgical gloves. One CHN commented, "I want to wear them [gloves] whether they're giving me that much protection or not, I want that little bit . . . of protection that they are giving me." On the other hand, a managerial subject explained, "gloves are provided . . . . They aren't to wear them in clinic for immunization unless you [sic] have bleeding hands or something." In the focus groups, when participants were asked if the cost of gloves to the health unit influenced their decision to use them, 81% answered "No" and 19% answered "Yes". A subject reported, "that was a big hassle . . . getting gloves in the clinic rooms. They didn't want to supply them.

They felt that . . . we were being emotional." According to another, "the gloves are expensive and 'Do you really need them?' . . . but these people should have the opportunity to wear gloves if they want to wear gloves, you know." Within one health unit, but in different locations, perceptions varied. In the main office, one subject stated, "we don't glove to immunize. We can. Nobody is saying we can't" whereas a CHN in a sub-office stated, "sometimes I don't feel we have enough protective equipment. Like here you say gloves, gown. Well, we aren't really, we don't always have enough of those things . . . . We scrounge for a lot of equipment that probably should be available."

Finally, Table 7 addresses health unit policies or procedures related to safety hazards. Five subjects were unaware of a health and safety committee in their health unit, eight did not know if their employer had written policies and procedures for needlestick injuries, and ten did not know if there were written safety policies and procedures. Thirty-nine percent reported some type of committee related to health, if not safety. One prototype was a staff health committee with representatives from each employee subunit. Another format was the joint occupational health and safety committee with subunit representation. For other CHNs, "there isn't any formal mechanism . . . . you just follow the formal lines of communication for any other kind of problems and that would be your immediate supervisor." The majority of CHNs reported some written safety policies and procedures. For example, one CHN commented, "It's our policy that we wear seat belts all the time. It's our policy that we drive with our lights on." Yet a CHN in another health unit remarked, "if I have one concern is that we don't have a lot of written policies and procedures. That would be our biggest, my biggest concern." Another contributed, "there's many things in this health unit that are done on . . . unwritten policy as opposed to written policy." An example of a policy that CHNs would like to see written was one which restricts travel "if the weather, with or without the wind chill factor is minus thirty-five or lower." Fifteen subjects made comments in questionnaire margins about fire safety, AIDS, universal precautions, needlesticks, first aid or materials handling (e.g., chemicals) in order to qualify their affirmative responses regarding written policies and procedures.

The impression that management was concerned about employee safety was inconsistent. On the one hand, a subject remarked:

> We have had some very difficult weather to drive in and we've had the Medical Health Officer phone all the offices himself and say 'You don't have to come to work today.' So I think they usually seem to be quite happy to put the nurses, like the safety . . first.

Also, in other organizations, "safety is part of our evaluation process"; "we do not have to take unusual risks"; "since then [accident] we have realized and been told 'You don't have to. If you don't feel your road is safe, you come back'"; and "if the roads are bad and the driving conditions are the [sic] bad or the weather's really, really cold, we're certainly not encouraged to go out at all." On the other hand, one CHN commented:

> Like no matter what the weather, you're expected to come to work. Um, there was a severe blizzard and some people couldn't get here. They got, had to take holiday pay . . . . Like the roads were blocked so I mean, that doesn't help morale . . . . I guess it makes one think they should take a risk.

Another subject added, "access to safe cars. That was a big issue for a long time 'cause we were driving old bombs that were really unsafe. And I had an accident." Even more forthright, "we were driving cars that would stall on railway tracks . . . . you couldn't trust them." Finally, one CHN observed, "we've for two years asked for an alarm system that we have never got." Security systems, vehicles, and inclement weather policies all contributed to impressions about managements' concern for employee safety.

Summary of Hazards in the Physical Work Environment

The community health nurses in this sample of five health units indicated physical and safety hazards to be the most significant in their physical work environments, while acknowledging biological and ergonomic hazards but discounting chemical and reproductive hazards.

The vast majority (97%) perceived risks to their safety. Dogs and road travel were identified most often. Working alone and unprotected were concerns, especially when CHNs reported potential and actual client abuse. Community health nurses have sustained work injuries, including motor vehicle accidents, needlesticks, assault, and dog bite. A commonly used piece of personal protective equipment was the car seat belt, followed by surgical gloves. The cost of the gloves influenced to a certain degree their availability and use. Although health units had some written safety policies and procedures, less than half of the subjects reported the existence of a committee dedicated to the health and/or safety of health unit employees.

Physical hazards emerged as the second significant concern of CHNs in their work environments. Ambient temperature control, inadequate ventilation, and air quality were specified. As well, more than one-third of the sample described exposures to noise and dust. Vibration, inadequate illumination, and cramped workspaces were identified less frequently. Although VDTs were used by one-third of the sample, they were used less than weekly by the majority of subjects.

Community health nurses recognized biological and ergonomic hazards at work. Most handled vaccines, were exposed to human body fluids or wastes, and encountered bacteria, viruses, and parasites in their work environments. A very large majority of CHNs (88% or more) reported immunity for polio, diphtheria, tetanus, rubella, red measles, and mumps. Approximately one-half of the sample were protected against hepatitis B and tuberculosis. Three health units provided the vaccine against hepatitis B for their CHN employees. Over half the subjects had experienced a needlestick injury, 10 in the past year. When handling used syringes, most CHNs followed procedures and did not resheath the needle, disposing of the equipment in sharps disposal containers.

A large majority of CHNs reported carrying heavy equipment or materials in the course of their work. Close to one-half indicated that providing direct services to clients or performing service-related activities required uncomfortable positions or repetitive movements. More than one-quarter described uncomfortable furniture, chairs in particular.

Chemical and reproductive hazards were clearly not a serious concern, although subjects did report exposure to tobacco smoke, disinfectants, and cleaning agents or solvents. Their use of photocopiers was indicative of a potential source of chemical exposure. In three of the health units, subjects had not been informed by their employers about WHMIS, the legislation dealing with designated chemical and biological substances. Finally, no CHN in the sample reported experiencing a negative reproductive outcome related to work and few CHNs were concerned that they might.

In conclusion, safety, physical, ergonomic, and biological hazards in the physical work environment are interrelated with organizational factors. The above findings point to organizations' technology, environment, and goals as well as the level of formalization, centralization, hierarchy of authority, and complexity. In the following chapter, the presentation of findings on hazards in the psychosocial domain further emphasizes the interrelationships between work hazards and organizational factors.

Footnotes

1 When subjects indicated more than one problem, responses were considered to be equal in importance. Each response was coded either as a category of hazard or as 'other'.

2 Compressed gases and materials that were infectious and poisonous, corrosive, flammable and combustible, dangerously reactive, or oxidizers.

3 Minor editing of transcriptions replaced "ah", "um", and false starts with ellipsis points in order to achieve clarity and emphasize the spirit of the quotation.

4 For example, subjects described receiving a live ferret and a dead bat; a pretest subject reported receiving a dog's head.

5 Percentages may vary slightly for the same integer of CHNs because they are based on the number of CHNs who responded to each question.

6 This open-ended question (i.e., fill-in-the-blank) was less reliable for needlestick injuries than a subsequent item which asked subjects directly if they had had a needlestick injury as a CHN.

Table 6

Self-protective Behaviours Reported by Respondents

Reported behaviour	Percentage of yes responses
Use of personal protective equipment	
Car seat belt	95
Gloves	54
Lab coat	40
CPR mouthpiece	35
Skin protective creams	21
Glasses	18
Plastic apron	12
Mask	4
Gown	2
Other	7
Use of gloves by situation[a]	
Procedures involving blood/body fluids	58
Checking for communicable disease/infestation	25
Broken skin on hands	25
Giving injections	8
Other	28
Safety-oriented courses taken[b]	
Basic cardiopulmonary resuscitation	90
Standard first aid	61
Defensive driving	33
Advanced cardiopulmonary resuscitation	19
Self-protection	19
Advanced first aid	14

Note. Percentages do not add up to 100% because they are based on the number of subjects responding to each forced choice (*n*=57).

[a] Percentages do not add up to 100% because they are based on the number of specifications (*n*=40) for the open-ended item on glove use. From 1 to 3 specifications were coded for each of 40 subjects.

[b] One subject was an instructor of first aid and two respondents were instructors of cardiopulmonary resuscitation.

Table 7

Health Unit Policies or Procedures Related to Safety Hazards as Reported by Respondents

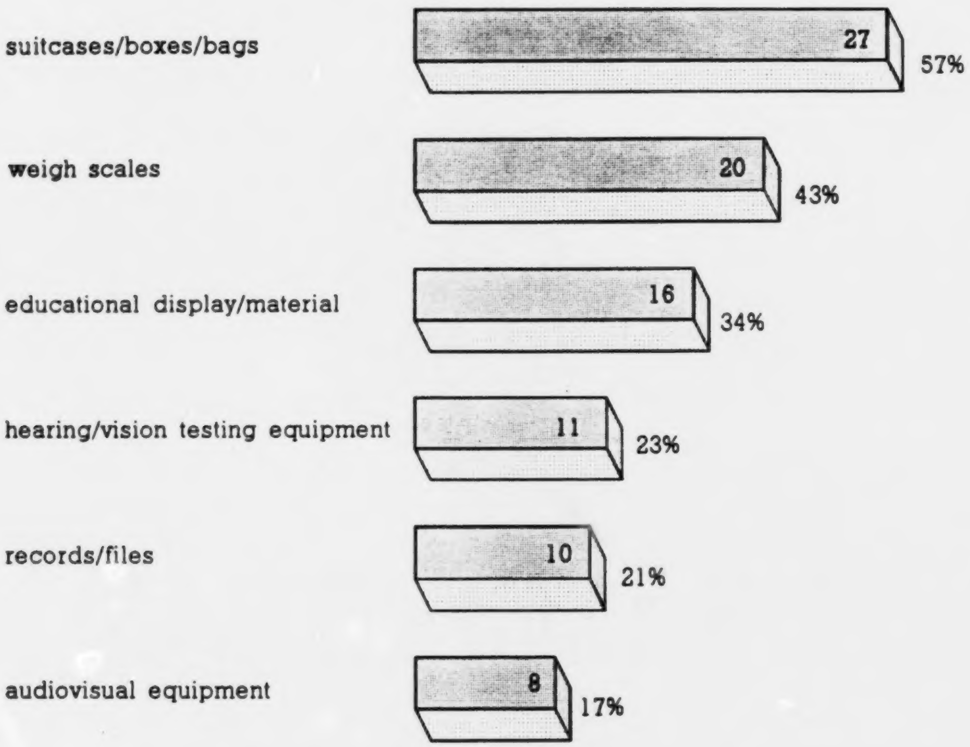
Reported structure		Responses	
		n	%
Health unit has written safety policies and procedures			
	Yes	42	74
	No	5	9
	Don't know	10	18
Health unit has a health and/or safety committee			
	Yes	22	39
	No	30	53
	Don't know	5	9
Frequency of committee meetings[a]			
	Every 3 months or more	9	-
	Don't know	12	-
Health unit has written policies and procedures for needlestick injuries			
	Yes	42	74
	No	7	12
	Don't know	8	14

Note. *n*=57. Percentages do not always add up to 100% because of rounding.

[a] *n*=21.

Figure 4. Ergonomic hazard: Transport of heavy equipment or materials.

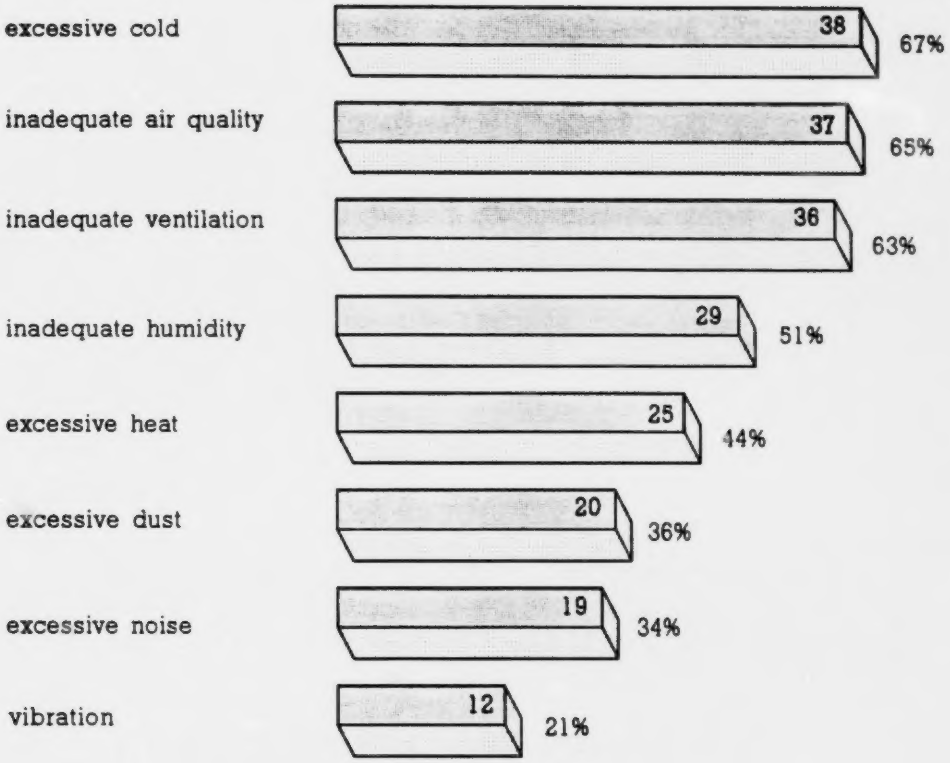
Number and percent of CHNs who report carrying heavy:



Note. All respondents who perceived that they carry heavy equipment were asked to specify what they carried. From 1 to 5 specifications were coded for each of 47 respondents. Percentages do not add up to 100% because they represent the number of respondents reporting each type of equipment or material.

Figure 5. Physical hazards: Ambient exposures.

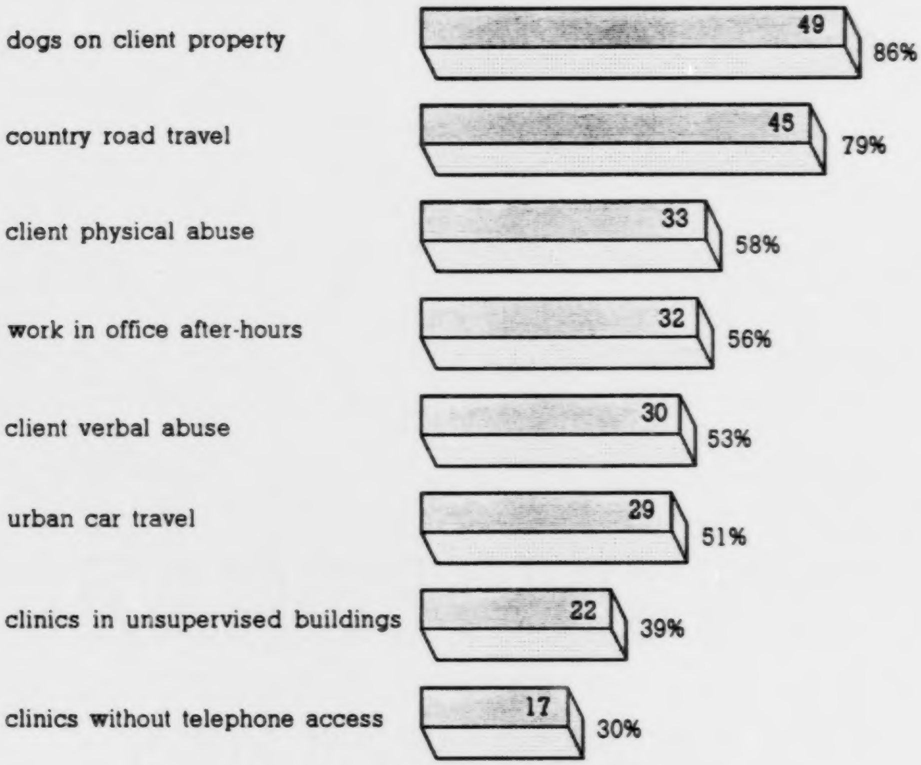
Number and percent of CHNs who perceive work exposure to:



Note. Except for forced choices on dust and noise (*n* = 56), all 57 subjects responded. Percentages do not add up to 100% because they are based on the number of subjects responding to each forced choice.

Figure 6. Safety hazards.

Number and percent of CHNs who perceive hazards to safety from:



Note. *n* = 57. Percentages do not add up to 100% because they are based on the number of subjects responding to each forced choice.

CHAPTER 5: HAZARDS IN THE PSYCHOSOCIAL WORK ENVIRONMENT

Psychosocial hazards were the most significant work hazards for the CHNs in this sample. The first of this set of chapters described the hazards in the physical work environment within an organizational context and in accordance with the relative importance indicated by respondents. This second chapter completes the set by addressing the psychosocial domain of the workplace where the most important hazards for this sample are located. The chapter concentrates on a key component of the first research question: the *psychosocial* hazards that community health nurses (CHNs) perceive in their work environments. The findings support the emphasis in the literature on CHNs' psychosocial hazards and provide new information and insights on the nature of these hazards. At the same time, by contributing results for the second and third research questions on the organizational factors underlying CHN work hazards, the findings advance my argument that the structural and contextual dimensions of organizations must be confronted with respect to employee work hazards. The data presented in this and the previous chapter are closely linked to the elements of a grounded theory that emerges for organizations from interview data. I will discuss those data and the elements of the grounded theory in Chapter Seven.

Multiple Triangulation

Confirmation and Exploration

As with hazards in the physical work environment, multiple triangulation not only contributed to the breadth of the results, but also confirmed the importance of psychosocial hazards in the perceptions of the study sample. Equally important, it provided a window to the dichotomies and diversity of intra- and extra-organizational factors associated with psychosocial hazards. *Methodological* triangulation confirmed the primacy of psychosocial hazards and established differences between health unit organizational factors. First, questionnaires identified the plurality of psychosocial hazards originating in the external and internal environments of the organizations and the frequency with which they were perceived. Next, interviews provided evidence that 54 CHNs (96%) selected psychosocial hazards for discussion. Interviews enriched the hazard information collected by questionnaire, introduced new information about organizational factors, and made very evident the negative aspects of identified organizational variables. Third, in the five moderated focus groups, 33% of the participants indicated psychosocial hazards to be the biggest problem. By comparison, 18% identified safety in the physical environment as the most significant hazard. No other hazards were identified as frequently by the focus groups.[1] As one CHN stated, "a broken mercury thermometer is nothing compared to that [a stressor]."

Data source triangulation also supported the significance of psychosocial hazards and augmented organizational information. First, the data were derived from subunit employees of the health unit organizations whose firsthand experience underpinned their perceptions of hazards and organizational factors. Documentary analysis (annual reports and organizational charts) also contributed, but in a very minor way, to the confirmation of organizational observations that were established through constant comparison across individuals within health units. Second, employees with both staff and managerial perspectives in organizations located in all three regions of the province (spatial dimensions) identified psychosocial hazards most often. Indeed, managerial CHNs frequently recognized only psychosocial hazards for themselves at work, if they acknowledged personal hazards. Next, in both the first and second stages of data collection (temporal dimension), psychosocial hazards were indicated by the majority of individuals and by the majority of organizational subunits.

Unit of analysis triangulation shed light on a divergence from the pattern. *Individually*, psychosocial hazards were indicated most often and organizational factors were discussed openly. That is, 96% of the subjects in all five health units identified psychosocial hazards and relevant organizational practices. *Collectively*, the pattern changed. In one health unit, focus group participants chose safety hazards more than psychosocial hazards as the biggest problem. In another, they identified psychosocial and safety hazards alike. In three health units, however, focus groups indicated hazards in the psychosocial work environment to be the biggest problem. From another perspective, just under half of all strategies or suggestions generated by the participants in the five collectivities were organizationally oriented while just over half were individually oriented. (These will be discussed in Chapter Seven).

Throughout this chapter, psychosocial hazards are referred to as 'stressors' in the sense that they are stimuli conditions (Lazarus & Folkman, 1984). Instructions to subjects in the questionnaire defined 'stressor' as something perceived by the subject to have a negative effect. Although the term 'stressor' may be operative for any one of the hazards in the work environment (D.B. Baker, 1985; Lazarus & Folkman, 1984; Levi, 1989; Manga, 1979; Olishifski & Plog, 1988; Randolph, 1984; van Dormolen, Hertog, van Dijk, Kompier, & Fortuin, 1990), subjects in the field differentiated between 'hazard' and 'stressor', applying 'hazard' to their physical work environments and 'stressor' to the psychosocial domain. As an example, one CHN responded, "about work hazards, . . . most of it seems to be in the area of stressors", although another did state, "I guess it's more the mental stressors rather than the physical, but maybe I'm not aware of all the physical." In general, however, subjects responded as if implicitly putting into practice what several CHNs made explicit. To illustrate, subjects explained: "for me, probably more the stressors than the hazards . . . . *I see two different things*" [italics added]; "I'm probably more concerned about my stressors than I am about my hazards [laughs]"; and "I think that the, you know, physical hazards I don't think are a big problem but the stress factor is, that's where it really is. I find it difficult."

Figure 7 displays the stressors that CHNs indicated most frequently in the questionnaires as their psychosocial hazards. The figure makes it clear that the origins of stressors for the CHNs in this sample lie in the external as well as internal environments of health unit organizations. Moreover, it provides evidence that CHN stressors are structural and contextual dimensions of health unit organizations. These are discussed in Chapter Six. To begin this chapter, the focus is on those externally located stressors associated with the provincial government, client populations, and community agencies and institutions. Cross-sectional data from the questionnaires and interviews inform the presentation.

Stressors in the External Environment of Health Units

Provincial Government

"More With Less"

Forty-seven CHNs described stressors with respect to the provincial government and their work.[2,3] Over 60% of those subjects identified resource allocation as the major stressor, associating lack of funding with staffing and program stressors. They indicated staff shortages as a result of cutbacks and hiring freezes, as well as program alterations, losses, or even acquisitions. According to one CHN, "the budget almost becomes a personal concern . . . I know we should be concerned but I think its, that overrides even your concern about your clients at times." As an example of cause for concern, in one sub-office alone, three full-time positions were lost in one year. The effects of budget cuts mean "some of us had areas increased, programs have been thinned down" and "we are expected to do more with less people . . . . People are not replaced when they're on holidays . . . . People are not replaced when they're sick." At the same time, a CHN described, "no money, no staff, more programs, consistently changing programs." Another regretted, "a lot of times follow-up doesn't get done 'cause we just don't have the time and that's stressful when you can't follow something through." In another subject's words, "we can't expect a minimal reduced staff to produce the same program . . . there's a limit to how much we can use the phrase . . . 'more with less'." One CHN expressed it this way. "I feel harassed most of the time . . . . it's probably just related to probably our shortage of staff and the fact that I work part-time . . . . you're doing as much as the full-time nurses in half the time." A colleague perceived, "you have to be ten people lately."

In fact, forty-five CHNs reported that their workloads increased in the past year. One CHN stated it cogently:

> Probably our biggest concerns right now are budget-related and staff shortages and we do get a lot of support and yet sometimes we're still left with uncertain feelings. What is going to happen to us in this office? What is going to happen to community health nursing overall?

During the interviews, subjects' observations about funding cutbacks pinpointed less obvious yet still significant effects of the government's fiscal decision-making. According to one, "the fact that they put a freeze on hiring has, has had an effect on stress and has, have added to our workload which was certainly heavy enough in the beginning. And then having more added on, having to teach prenatal classes which was additional work." "We still do the rest of the workload as well as prenatal," explained another. "I really don't plan to sign my entire life away to prenatal classes, especially when nobody else really wants to," remarked one CHN. Another CHN asked, "if you know they [colleagues] do not have the skill and wouldn't be comfortable, why subject them to something that they may not feel comfortable in and cannot do as well?" Even CHNs who were not required or forced to teach prenatal classes as a result of the freeze on contract prenatal instructors were aware of effects. "I know that that's having, definitely having an effect on me because of the, you know, the day, just the hour to hour workload when the nurses are busy preparing for prenatal or they don't come in 'til later in the day because they're teaching in the evening so it has a bearing on me." When working flexible hours, the CHNs who teach in the evening lose their morning for home visits and get further behind. One explained:

> It's a problem, because the way the union has worked it, is that we get off the morning of [prenatal class day], we do the shift thing. Well, on one hand it's nice. You feel a bit more refreshed . . . . on the other hand . . . you're short a half day in your regular workload . . . . when you do come to work that half day, you're spending that half day . . . supposedly in prep so you lose the whole day for community work.

At the same time, orientating staff to teach prenatal classes was an extra demand on experienced CHNs.

Two additional stressors from cutbacks were made evident: the threat of lay-offs for staff and the public reaction to inconsistent services from autonomous health unit programs. In the words of one CHN,

> Last year the money was so tight that, you know there was, we haven't had lay-offs but we've had vacancies not filled and there was a real possibility that if the government didn't come through with more money, we were going to have somebody laid off . . . . there's enough stress with dealing with work situations, you know, with shortages without having that.

Because of the threat of lay-offs, one subject stated, "there's a lot of worry and a lot of stress even though we've been told that there's not going to be mass lay-offs." With respect to the public, another CHN explained:

> With the budget cuts, every health unit is, can conceivably cut differently . . . . so that something is going to be occurring in your next door neighbour health unit that you are cutting out . . . . and you are going to, we will have to

> field the rebuttal of the public who are distressed when we drop something.

Subjects in more than one health unit reported the difficulties when the public wants to cross jurisdictional boundaries for convenience of service and is either turned away because of the budget restrictions or discovers that the same services are not offered. If the service is offered, it increases the workload of CHNs. As one subject explained, "it compounds your, your work because it's harder to have the continuity. You have to go to different sources for information. It would be different if that client dealt solely with things in our area." She qualified her comment by saying "that doesn't come up that often."

Regionalization/Restructuration

Despite the inconsistency of services across health units, subjects expressed concern about regionalization or restructuring of services, both promoted by the government following release of the Rainbow Report from the Premier's Commission on Future Health Care for Albertans. One subject emphasized, "and especially with this Rainbow Report. You talk about stressor. What's going to happen to us in two or three years?" According to one CHN, "when we regionalize, you know, it's the most powerful that are gonna [sic] command the money . . . . you wonder - your own future, the future of community health because it'll be who gets - who sells themselves the most." Another CHN explained, "that . . . has caused some staff . . . to feel very inhibited and threatened and feel like they cannot say things that are on their mind because they [sic] might be repercussions." Yet another said, "being under . . . a different management who, who may have a different philosophy than what ours is . . . . It can be a bit of a problem." From the perspective of losing the positive aspects of a particular health unit, one CHN asked, "what's it going to do to our creative spirit?" Another stated, "I generally feel that this health unit is run really well . . . . It's got, you know, good administrators. There's lots of cohesiveness. We've got lots of say about things . . . . I'm afraid that we're going to lose all that with regionalization." Her colleague stated it this way. "In other words, [name of health unit] could be gone in no time flat and that's very stressful for a lot of us because this health unit is the best place I've ever worked and, I mean, to have it change at a political whim . . ."

Yet another concern with regionalization or restructuring is related to job security for CHNs without a baccalaureate degree. As one CHN explained, "it's just the not knowing . . . what it's going to mean in terms of job security and changes . . . within our jobs." Another said, "if I had my degree, okay, then I would have other options to apply to different places." Only time will tell what the real outcome will be regarding regionalization. In the words of one respondent:

> They were going to carve the province up into the eight or nine regions and we would become lumped in with whoever and we might even be split up and lumped into, you know, as separate units as opposed to one total unit being absorbed by another larger area . . . . But it seems now from what I understand and I don't think any decisions have really been made known yet, but the trend seems to be away from worrying about the boundaries and more looking at regional planning which we would have no problem with at all.

Attitude Toward Prevention

Several CHNs associated the provincial government's reduced funding with lack of support for health promotion and illness prevention. It was the government's presumed attitude toward prevention in health care that was an even more frequent stressor for subjects than the stressor of regionalization. One CHN stated, "I do not believe that the government believes enough in prevention to give health units enough money." According to another, "they're talking about cutting out money for vaccines next year." From a different point of view, a subject stated, "every newspaper article you talk about, when they talk about preventative health care, for some reason they feel Home Care is, because they're preventing people from being in the hospital and that's not preventive health care." Others noted an inconsistency between the government's *professed* support for prevention in health care and its *practice* of underfunding preventive services.

Inconsistencies

In addition to concerns about the lack of consistent service, subjects described the lack of consistent policies and standards of practice for all health units. "We've spent a lot of time doing community health nursing standards and we don't have them," explained one subject. The standards were "published but they've never been adopted by government . . . . They were in a beautiful binder and all." Although standards for practice were developed by a committee of CHNs, they were not approved by a meeting of health unit directors. Reaction from Alberta Health was apparently "very mixed . . . . A lot of staff felt there was lack of support for community health nursing." Subjects also described inconsistencies in advice and cooperation from provincial departments (e.g., Alberta Health). This was apparent with directives during the pertussis (whooping cough) outbreak. According to one CHN, "we were caught in the middle between what the . . . schools wanted done and what the director of communicable disease control was telling us to do and the fact that everything changed constantly. Every week we got different guidelines." Another explained, "all the uncertainty coming from the . . . provincial consultants as to which way we were going to go and then the next day having something change." It was also evident with Social Services. "They are so overworked . . . . I feel there's a little bit more responsibility put on us perhaps because of their workload," reported one CHN.

A stressor identified during interviews derives from the differences in policies and standards between autonomous health units and federal health jurisdictions in the province, especially with respect to communicable disease outbreaks (e.g., whooping cough, measles) and infestations (e.g., lice). A subject explained, "it is an extra stressor because their policies are not the same as ours in relation to many things and it's difficult to work together."

Finally, a related yet distinct stressor concerns relations with local Native government (e.g., band councils) in federal health jurisdictions. CHNs described difficulties with coordination and collaboration. For example, one CHN explained, "we're still waiting for a meeting with the chief." Another stated, "I just feel that sometimes he [the chief] makes [health-related] decisions without consulting - or letting us even know." One subject observed, "some reserves are better off than other reserves depending on the political access of the chief" and another stated, "they [the chiefs] can create a lot of stress. They can really reduce a lot of stress depending on the mood at the time. On what they want."

Clients

Response to Service

Forty-two of the 57 subjects reported stressors in terms of the clients that they deal with in their work.[4] First, the client response to the service or to the health unit was a stressor. Community health nurses described noncompliance, hostility, complaints, demands, or apathy. To illustrate, they reported: "we have had clients in there [clinic] that we were very concerned about because of aggression"; "you can go into a home where, where there has been drinking and . . . you certainly have to know your clients and know how they're likely to act toward you as the outsider"; and "the parents were really upset, you know, irate because their kids kept getting them [head lice] back and back and back . . . . so they kind of yelled at me a bit."

Nature of Problem

The nature of the client problem or situation was a stressor. For some CHNs, it was the severity of client problems. For others, cross-cultural nursing with Canadian Natives was a stressor. Family violence, poverty and neglect, single teen pregnancies, death and bereavement, and transience were all identified as stressors. Still others indicated that clients who were not accessible by telephone increased the workload or posed a threat to the CHN who must visit unannounced. Client communicable diseases and severe vaccine reactions were also stressors. According to one CHN, "communicable disease outbreaks, that's a big community health stressor." Communicable disease incidence was one facet of subjects' concern. A second facet was identified by a CHN who stated, "one thing I can think of for sure is hepatitis B . . . . and because of the budget, they are not immunizing . . . . even though our risk is small, I think we're still at risk and I think we should be protected." Seventeen and fifteen subjects, respectively, reported potential exposure to HIV and HBV to be stressors.

CHN Expectations for Service

Subjects' expectations for client service were stressors. They wanted clients to be treated impartially, professionally, and diplomatically. They wanted confidentiality of client information to be maintained, time to deal with difficult clients, and opportunities to achieve closure. "I don't feel we're getting the services for our clients that we should be getting from them [mental health services]," was one comment. When expectations were not met, the conditions became a stressor. From a different viewpoint, a CHN expressed concern over client group organization for lobbying purposes. "Seniors are vocal. Young mothers aren't. Seniors have time to group. Young mothers don't." Among 54 CHNs, moreover, 24% reported ethical dilemmas, 17% indicated medical emergencies, and 6% identified sexual harassment as stressors.

Community Agencies and Institutions

Social and Educational Services

About half of the total sample[5] reported stressors resulting from their dealings with community agencies and institutions. Among those identified were mental health services, family support services, tuberculosis and sexually transmitted disease programs, schools, and social services. "Our relationships with the school staff are changing," stated one CHN. Another foresaw schools "creating all kinds of problems" because of their AIDS policies. Yet another explained, "often times teachers feel, they tell the community health nurse so she'll look after everything. They don't have to get involved really, you know, and so you find that you're in the middle of it sometimes." The majority of the stressors were related to communication and coordination with social service agencies, but subjects also reported concerns with accessibility to the services and personnel of the agencies or with agency and institutional demands on health units. One CHN stated, "staff cuts and budget cuts . . . leaves less people to network with when you're working on cases." Related to that, another explained, "we spend a lot of time trying to contact other professionals and . . . it gets really frustrating . . . . plus they change so frequently."

In addition to the problems of communication and accessibility, another perspective was presented by a subject who referred to the schools. "When their budget is cut . . . they ask us to do more school presentations . . . . so we tend to be . . . the person it seems to me that people turn to and say 'Well, you know, can you do this because we don't get this service any more from here?'" Not only the school system increases its requests for services. One CHN gave the example of family support services. "When the Family Resource Centre . . . offers workshops to women, if that's cut back, then they are more apt to talk to us."

Physicians

Seventeen subjects (31%)[6] acknowledged that relations with community physicians were strained. "Maybe it's partly that still physician-nurse hierarchy and it's . . . more evident in some places than in others," commented a respondent. One CHN observed, "one-on-one you can maybe deal with it on the telephone, but we have all been abused over the phone by some physician at some point." Another reflected, "they just seem to see us as a threat instead of someone that they can work with in a collegial way." Yet another stated, "we are a thorn in their side . . . I think part of it is that they have no control over us and what we do. Just about any other nurse and even Home Care is under the direction/guidance of a physician." One respondent reflected:

> We do, do work more autonomously and independently and so we are out there counselling and giving advice. That's so much more independent from them and maybe that's why they see it as a threat whereas maybe Home Care nurses in a way work more closely with them.

During the interviews, subjects also discussed stressors created by medical consultants for tuberculosis and communicable disease (at the provincial government level) who give conflicting or inconsistent directives that CHNs must justify to the community physicians, school systems, and public. One CHN wondered if "physicians in those kind of positions either [sic] forget the impact on a decision as it filters down before they make it."

Unions

To conclude the presentation of stressors in the external environment that were indicated by questionnaire, 16 subjects[7] identified stressors related to unions. The majority referred to union philosophy, confrontations, or negotiations. For example, one CHN explained, "as far as doing collective bargaining in the area of work stressors . . . we're in our infancy." Another related that joint occupational health and safety committees were "probably the first thing that gets thrown out every time contract negotiations start . . . . their [management] immediate response is, 'Oh, we don't need that'." Yet others allowed, "something we're going to look at in our next contract is health and safety issues" and "it [health and safety committee] was always one of the last ones we gave up at negotiations, but it was never one, I mean, most people wouldn't go on strike, for example, over a health and safety committee." One factor that had a bearing on outcomes was joint bargaining. "We bargain provincially with several health units . . . . if the group decided as a whole and took a vote and said 'No, we don't want to accept an occupational health and safety committee as part of the contract,' then it would, would not go through," explained one subject.

Several CHNs disclosed that the absence of a union was a stressor. Three of the health units were not organized under labour legislation (see Table 2). According to one CHN, "there's been a real fear [of job loss]. Like we're not unionized." From another point of view, subjects related, "the word around the area is that you just don't speak union [laughs]. You don't talk about a union or otherwise things will be made miserable for you" and "whenever there's been talk of forming a union you're immediately told that . . . 'Go ahead, try it, but if you do you won't have a job'."

The aftermath of a long and bitter, union-organized, multi-unit strike that occurred in 1985 must also be recognized. One subject explained:

> It was *the* place to work . . . . those of us who went through all that no longer think that . . . . We can see this is not the most wonderful place in the world and these employers are not the most wonderful people in the world any more.

In the questionnaires, few subjects identified the fallout of the strike as a stressor, but in the interviews CHNs acknowledged the stressor of not only the hiring practices, but also the early returns to work during the strike. "There was major, mega stress around here for awhile," related one CHN. Six years later there were tears as well as justification and reflection during interviewing. "Working through but not gone", as interpreted in one interview, seems to describe the gestalt.

Stressors in the Internal Environment of Health Units

This chapter now shifts focus to those internally located stressors associated with administration, clerical work, support services, collegial relations, workload, and Boards of Health. As in the first section of the chapter, the presentation of findings expands upon the stressors displayed in Figure 7. Structural dimensions of the organization figure prominently among subjects' stressors. Data from the questionnaires and interviews again inform the presentation.

Administration

Almost three-quarters of the respondents identified stressors related to administrative aspects of their work.[8] Eleven of those respondents specified paperwork, while 30 denoted behaviours and decisions of management as the major stressor.

Behaviours and Decisions "Higher Up"

Subjects acknowledged differences in management practices. To illustrate, one CHN reported:

> I manage the community health nursing program. I do my own budget. I control my own expenses . . . . One of the things that we were not to cut was one of the last things, that what everybody touched, was staff development . . . . Staff development has not been moved. It hasn't gone up either, but it's not been chopped one cent.

The following exchange presents the opposite situation:

Interviewer: How much control do you have over the budget for your department?
Subject: None.
Interviewer: Do you know how much money you have for your department?
Subject: No.

Subjects portrayed contrasting management styles that ranged from "quite laissez-faire" to management "terrified of not having control." In fact, CHNs reported very different experiences across health units. Several subjects described an open management style. To illustrate: "management has created an atmosphere where we workers are free to air our concerns in a secure environment without threat or reprisal . . . or loss of . . . credibility"; "it's a very supportive management"; "the door is always open . . . . I feel the support is there"; "the CEO is excellent. Excellent . . . . Very well organized lady"; and "you just know that they aren't undermining you." Additionally, "the management people here are very open to concerns and questions and always finding solutions or getting back to you on things" and "if you've got a problem, let's bring it out and discuss it," is the attitude. According to other subjects, "we have the beautiful gift of having a director of nursing that we all respect . . . . She has integrity. She deals with fairness" and "during that whole pertussis thing, she [supervisor] . . . she had shoulders as broad as I don't know what." Subjects recognized certain realities, however, even within open management. One CHN expressed it this way. "She is always accessible to her staff and she usually tries to take action wherever it's possible. Now sometimes her hands are tied too from above or from below. Be the union below or the management from above."

By contrast, CHNs described other management styles. "He apparently doesn't . . . follow through on things," remarked one subject and another stated, "I don't know if it's so much decisions that have been made, but maybe decisions that have not been made." Others commented: "we've always felt like we wanted to be more involved in decision-making"; "they're going to say 'If you don't like it, there's the door'"; "I just feel like I'm this little person here who has, well, we have no input at all and we can't change anything"; and "I feel that there's been input, there has been input, and . . . changes haven't occurred." Subjects also expressed it this way. "We should be taken seriously and not made to feel we're being over-emotional or stupid"; "sometimes we do feel like, you know, they just think we're a bunch of cackling old hens"; and "I get the feeling on occasion . . . that he perceives it as - more bitching. 'You females are always bitching about something'." A managerial CHN stated, "the biggest stressor that we have is the problem of inconsistency and insufficient communication about . . . changes and things." Perhaps the expectations of another managerial CHN represented the underlying sentiment about management style within the sample. "I expect . . . to be supported as a manager and to have my decisions respected, not necessarily agreed with, but respected. And . . . it's also important for me as a manager to know that my staff be supported and respected."

Subjects disclosed concerns about management skills. For example: "they don't have the managerial skills to deal with these things"; "they should have . . . qualified people in . . . the positions"; "I feel it extremely important that people are qualified for the jobs"; and "one thing we're lacking here is . . . performance appraisals . . . . and I think that's due to . . . not the right qualifications for the jobs."

While some respondents appeared unwilling to be specific in their assessment of management skills, others referred to management decisions that affected their workload. Coded questionnaire responses defined decisions about coverage (described under Workload Increase), work distribution, delegation of responsibilities, and number of meetings. Other coded responses referred to unclear communication, over-supervision, and trivialization of matters important to CHNs.

A number of respondents reported management inconsistencies with respect to interpersonal behaviours, treatment of employees within and between programs, and long-range planning. "We're never quite sure which way we're moving when"; "I've just learned not to expect a lot of support"; "there's definitely a lot of road-blocking going on"; "there's a, very much a condescending attitude"; "I feel the men here have a little more . . . leeway maybe or say in some things"; and "this underlying current . . . that the nurses seem to be in the wrong all the time." One subject explained, "they [nursing management] usually do something about a concern we have . . . . Like I don't really think that that's where there's a breakdown . . . . I think it's probably higher up."

Regarding work hazards, one subject stated, "management in our area . . . in community health, has done a lot to assist in the changes for the better in the hazards control", but another reported, "a lack of willingness [by administration] to discuss it and/or deal with" work stressors or hazards. Yet another CHN identified a management inadequacy when she stated, "there was no one I could go to to debrief [about a safety incident]."

Paperwork

Respondents also indicated paperwork to be an administrative stressor. They described insurmountable and repetitive paperwork that reduced the time available for clients. One subject reported, "forms for everything." While CHNs implicated the paperwork associated with program reports, personnel documents, minutes of meetings, and intake documentation, they viewed ACNARS (Alberta Computerized Nursing Activities Reporting System) with more disfavour. "On an ACNAR, we record everything we did in a day. Phone calls, visits, kind of contacts," stated one respondent. By contrast, another CHN claimed, "ACNARs are . . . for numbers in clinics, numbers of home visits. They gear to the service, to the age group but they don't give you a total picture." From yet a third perspective, one CHN admitted, "I think I maybe wouldn't resent it so much if I really thought it was worthwhile . . . . I'm sure there's no consistency in filling those things out

. . . the busier you are, I find, the less you have to write down on them."

Clerical Work and Services

Almost two-thirds of the sample described stressors associated with the clerical aspects of their work.[9] A few subjects (17%) specified concerns about the work performance of clerical staff. They would have liked more attention to detail (e.g., proofreading), openness to change, prompt notification of messages (with correct details), and less discussion of clients, perusal of client records, or counselling of clients.

"Getting It Done!"

Over 80% reported that getting clerical work done was the major stressor. Community health nurses disclosed two significant aspects to their clerical work stressors. On the one hand, they were not in accord with the amount of time that was required to do paperwork (e.g., ACNARs, forms, documentation), acquire computer skills, or do work that corresponds to the domain of the clerical staff. Subjects described, "too much paperwork", "charting, forms, forms, and forms, ACNARs" and "getting it done!" On the other hand, CHNs reported hindrances to getting clerical work done. Lack of cooperation by clerical staff, lack of clear roles and responsibilities for clerical staff, and fragmentation of clerical staff duties (that have or have not been made explicit to the CHN staff), created unnecessary expenditures of time and energy. One subject wrote, "I do far too much clerical work simply out of lack of cooperation" and another, "you are always asking 'who does *this?'"* Others stated, "there's so many people that do different jobs . . . . one does communicable disease, one takes messages, one helps you in your schools, one books your appointments" and "somebody pulls the records, somebody can type the letter, somebody does TB follow-up and somebody does school records." One CHN explained:

> It's sort of knowing who to go to to get assistance and it's been in a constant state of flux with a lot of hard feelings amongst themselves . . . and it just affects us simply because we're working side by side.

One CHN suggested, "if they had a box and you just threw it in, they could sort it out themselves . . . . It would make life simpler [laughs]." Finally, a subject wrote, "workloads are VERY HEAVY for clerical staff assigned my work; they do their best and are great people but sometimes my priorities are added to the list of priorities."

Collegial Relations

Thirty-three subjects[10] identified stressors related to collegial relations with peers or superiors within or between programs. Although a few acknowledged personality clashes, more referred to the affect of colleagues (e.g., tension under pressure, moodiness, distrust) or their professional performance (e.g., productivity, communication, responsibility, punctuality). The majority of respondents reported stressors that derived from the behaviours of co-workers in their collegial role. Indeed, one subject stated, "my only stressors have to do with my professional colleagues."

Lack of cooperation or teamwork, failure to carry a fair share of the workload, and unwillingness to accept professional differences created stressors among colleagues. Failure of management to provide *consistent* treatment for professionals in different programs also generated stressors for collegial relations. Subjects' comments included: "co-workers . . . . create stress"; "you kind of have to watch your back"; "some don't pull their weight"; "if we all pitched in and helped we wouldn't mind"; "they aren't consistent sometimes, my colleagues"; and "you need to be flexible enough to make changes." In contrast to the questionnaire data, comments made during the interviews introduced opposite outlooks. To illustrate, subjects stated: "my co-workers are good sounding boards"; "most of the people here are really great to work with"; "I find the nurses are really supportive of each other and that's basically the only thing we have"; "there's a lot of sharing that goes on and that's just between the co-workers. That's not from management. That's just the staff nurses trying to pull together"; "there's lots of support from your colleagues here"; "I'm sure there's problems up higher. But that's up higher. I'm down here"; "my co-workers are very good. They're very quick to give you a hug if you're having a bad day"; and "this is the best place that I've ever worked where the staff really pulls together." Additionally, "we're all treated equally even though some programs are bigger than others, the idea is that we're all part of a team here and nobody is, got any more status than anybody else."

Two comments made by respondents served to introduce yet another aspect of stressors and collegial relations among nurses. First, "nurses, whether it be CHNs or . . . nurses who are employed in the hospital, or Home Care nurses, whatever, are not supportive of one another" and second, "we should be working together here. We should be as Community Health nurses and as Home Care nurses." Two generic nursing programs were offered to the public by each of the health units in the sample: Community Health and Home Care. In smaller communities the staff for the two programs had more opportunities to interact. When the two programs were housed in different buildings or geographical locations, interactions were less frequent and appeared to add to inherent difficulties deriving from funding inequities. One CHN commented, "unfortunately, knowing the physical set up with us here and Home Care over there it's very, very poor . . . . And we miss them." Similarly, in another health unit, one subject's comment is typical of others. "We rarely see each other and we're not that friendly with each other . . . . you're too busy . . . . if we flash into each other's offices, we're on the dead run." On the other hand, "I think in our office because we're in a smaller office, we do share a lot because . . . the staff is very much smaller," portrayed the sentiment of some sub-offices. Yet more than one subject believed what one CHN stated. "Home Care has a higher profile. I think that is provincial."

Subjects appeared reluctant to introduce the problems between the two programs for discussion. When the topic surfaced inadvertently for one subject, her response was, "I let out the cat" and another CHN said, "there's problems with, *might as well say it* [italics added], Home Care and the other nurses." Other CHNs did make the following comments: "we see our role as Community Health and Home Care as being almost as different as us and Speech. They do totally different things - treatment orientation"; "from my perspective, Home Care is very . . . possessive, very territorial"; "I hate to see the rivalry"; "always,

always, always a problem in territory that I have a real concern with"; and "there seems to be a bias that they get the money and it's not our imagination. It's not feeling sorry for yourself. It's not feeling deprived. It is a fact." One subject stated it succinctly. "Home Care gets money. They get staff. They get relief." Others expressed it differently. "We're not the key in the public eye at the moment . . . . We do the steady plodding" and "Home Care has a very big voice."

From another perspective, one subject reported, "I think Home Care is way ahead of Community Health Nursing . . . . We should have standards, we should have quality assurance, we should be computerized, we should be all of this and we're not." As well, "there's a bit of antagonism there too, I think, because Home Care keeps getting more funding and they keep getting to increase their staff and they get relief staff where we don't," explained another subject. For some, the friction was longstanding. A CHN stated, "there's some conflicts between departments and it's been here a long, long time." Another expressed it this way. "It's too bad that there's - seems to be this lack of - closeness with Home Care - this has been around here for a long time . . . . We're in different buildings . . . . and just the physical proximity could make a difference I suppose." A final perspective is captured by the comment, "people sometimes can . . . let personalities go above principles."

Workload

Workload was a significant stressor for subjects. Specifically addressed in closed and open-ended items in the questionnaire, workload also surfaced in open-ended responses under most other major stressors in both external and internal environments of the health units. When subjects elaborated in the questionnaires about their administrative, clerical, collegial, Board of Health, community agency, and provincial government stressors, they also referred to workload. Examples of comments made during interviews include: "one [of the major stressors] is the workload and I think you'll probably hear that from everybody"; "I keep focussing on safety but there are certainly stressors in terms of the workload"; and "the one thing that I feel that I don't have a lot of control over is the stresses that are thrown at me through the workloads."

Workload Increase

During the past year, the workload increased for 45 out of 57 CHNs. Subjects described a number of main reasons for the increase.[11] The majority (62%) indicated staff or budget-cuts which had repercussions because of the augmentation of the remaining staff's workloads. Sixteen percent differentiated between an increase in duties and the general division of labour due to staff losses. They identified duties such as orientation of peers (e.g., to new areas, prenatal teaching), supervisory activities, coverage of activities previously the responsibility of other programs, and delegation of management activities. For 13%, the increased workload derived from an increase in the population of the jurisdiction served by the health unit. For another 13%, the increase originated in new programs or focus. Twenty percent described other reasons for the increase such as part-time employment, culture of the client, specialization as a CHN, research activities, personal interest, and meetings. "Meetings are breeding meetings," explained one subject.

Subjects also indicated coverage (of service) as the main reason for their workload increase. In the questionnaires, few of the 45 respondents denoted this reason, but in the interviews CHNs did acknowledge the stressors created by coverage. They referred not only to covering for sick or injured colleagues, but also to providing noon-hour coverage in at least one but not all of the health units. They acknowledged, "very positive group workings . . . and support" when requiring coverage themselves. Yet there was another facet that one CHN explained this way. "One thing that really gets me is when you're not feeling well and you feel like you have to come to work 'cause you know there's nobody there to cover your clinic and you've got a bad cold and you shouldn't be even doing clinic but there's nobody to cover and you hate to phone in sick unless you're dead." In addition, a CHN indicated, "you come to work so you bring your cold to somebody else." Another described management's response as, "carry on and do the best you can . . . . if you can walk, you come to work." At the same time, subjects admitted to "feeling really stretched" when providing that coverage for colleagues. Covering meant, "you have to stop whatever you had scheduled . . . and then reschedule" or "rotate through noon coverage." Having to reorganize the work was the stressor. "You come to work, you've got your day planned. All of a sudden somebody's sick. You have to change all your plans and then you just cover clinic . . . . then you worry about your own work going undone."

Over half of the study subjects reported work overload and 23 CHNs indicated work pace to be important stressors.[12] Seven subjects qualified their responses with, "at times", "on occasion", or "sometimes". Figure 8 displays the responses of the subjects when asked how often they feel under pressure at work. Twenty-two subjects (39%) reported feeling under pressure 'often' on a five point scale. Figure 9 represents the responses of 56 CHNs when asked to quantify how much of a problem work pressure is for them. For nine subjects (16%), the pressure they experienced at work was a serious problem. They indicated either four or five on a five point scale where 1 = no problem and 5 = very great problem.

Boards of Health

Thirty-one CHNs[13] reported stressors related to the Boards of Health. Twenty-five of the 27 Boards in the province are composed of elected officials.[14] They might be farmers, educators, small business owners, ranchers, homemakers, to name a few of the backgrounds. In fact, "conflict of interest has to be clearly defined," according to one subject. Additionally, "you may have a completely new Board every three years . . . . Its culture, the way it functions, what it expects of management staff will be different," explained one CHN. "I don't really think they understand all the intricacies or all the factors involved," stated another. Another subject related that "[a] few of the Board members . . . were very adamant about 'Board members make policy, health unit staff implement policy and everybody in the health unit is staff'." This may explain why a CHN in another health unit stated, "there is a management group and we do meet, but we're very weak and we - I think we tend to be very protective of our own little area." In fact, "things are changing . . . this is a much more 'hands on' Board." Conversely, a subject in a different health unit reported, "the way it runs here . . . the Board really does not interfere with anything that we do." From a different perspective, another subject explained:

> A few [are] on there who are there by choice not just by political appointment and the difference because of that I think is important, that they have a true interest in the health unit and they have a heavy influence on . . . the rest of the Board members I think.

Her point of view contrasted with, "they're elected county officials who come on the Board and, of course, they always consider Health Unit Boards very cushy positions" and with, "if you can't do anything else you can be on the Health Unit Board [laughs]." Similarly, "we still hear reports that they like to be in the health units because they don't have many problems to deal with" and "I'm not sure that they're really as keen and as interested and a lot of their workload schedules are extremely heavy that sometimes health takes a lower priority." The following cogently expresses another view: "I would rather see a financial person that heads, much as a president of corporation or whatever, but I don't like the way it is run now . . . . We are a business. We are a big business."

Not many subjects referred to the Boards' potential decisions regarding lay-offs, restructuration, or new program directions. Most reported the major stressor as the Boards' lack of understanding or attitude towards preventive services, while more than one-third referred to the Boards' allocation of resources. For example, "they determine if we get a new vehicle or an old one [laughs]."

Priorities and Fiscal Decisions

According to respondents, their stressors derived from Boards who lacked a health background, had little understanding of CHNs' work, gave health a lower priority than other concerns, and retreated from proactive positions on preventive practices (e.g., no smoking) or environmental issues. "We're discouraged from knowing our Board members," stated one CHN. "Things that we have wanted to get to the Board with, have been censored," explained another. "You'd like to feel that the people that are managing the health unit had a good idea of what we're doing" and "they are not very well educated to what we do or what our job is," were representative comments. Others remarked: "not many of them have a medical background"; "it's so very hard for them to see just, just any vision we might have . . . because they just don't understand"; and "because it's a female profession I really don't think they listen." Related to that, another commented, "it seems odd that you get a staff like this that's so predominantly female and yet, the Board is predominantly male."

Board budget decisions were a stressor specifically with respect to monetary recognition of CHNs' education and worth and funding for programs, inservice, and continuing education. A subject explained, "the stressors are how much money will we get and is what we get going to be adequate to maintain staff . . . . and the uncertainty too is [not] knowing how the Board will apply . . . a budget change."

Finally, a CHN describes what she would like to see in a Board:

> I feel that what makes a good Board, personally, is one where the membership is people who, who have an interest in health and in the health unit . . . who are not merely there for some political gain . . . . And if they are there because they have an interest then they listen and they, they want to be educated as to our function in the community. And they are interested in the workers and the workplace, which ultimately reflect on the product of service to the community.

Summary of Hazards in the Psychosocial Work Environment

Community health nurses reported psychosocial hazards to be the most significant hazards in their work environments. Using the term 'stressor' to refer to hazards in the psychosocial domain, subjects provided evidence that the origins of stressors were in the external as well as internal environments of the health unit organizations. Externally located stressors were associated with the provincial government, client populations, and community agencies and institutions. Internally located stressors were related to administration, clerical work and services, collegial relations, workload, and Boards of Health.

The major external stressor was the provincial government, according to 83% of the sample. As a result of cutbacks and hiring freezes, subjects described staff shortages and program changes, the addition of prenatal classes to workloads, the new threat of lay-offs, and the task of placating a displeased public. Because of inconsistent applications of budget cuts across health units, programs and services were not identical on both sides of jurisdictional boundaries. In spite of those inconsistencies, however, CHNs described concerns about the implications of government-supported regionalization or restructuring. In particular, they identified the potential loss of some good administrators, the power struggles that might occur, and the threat of job loss if CHNs were not degree-prepared.

A more frequent government stressor was the attitude toward preventive services that subjects perceived to underpin the reductions in funding. Additionally, the inconsistencies in government directives, the lack of standards of practice and policies for the whole province, and the differences between federal and provincial jurisdictions were stressors.

Almost three-quarters (74%) of the sample reported client-related stressors. If not the client response to the health unit or service, the stressors were the nature of the client problem or situation (e.g., poverty and neglect, culture, family violence, communicable disease) or CHNs' unmet expectations for impartial, professional, and confidential service for their clients.

Approximately one-half of the sample described stressors related to community agencies and institutions. Most were concerned with communication and coordination between agencies, but subjects also referred to the reduced accessibility of services and personnel within social agencies and the demands made upon health units by agencies and institutions.

Just under one-third of the sample reported physician-related stressors, including physicians in government departments who provided inconsistent directives for case management and community-based physicians who appeared to resent CHNs' autonomy. Twenty-eight percent of the subjects described stressors related to unions. While most referred to union philosophy, confrontations, or negotiations, others reported that the absence of a union was a stressor. Furthermore, a multi-unit strike in 1985 had long-lasting effects.

The major internal stressor was administration, according to 74% of the sample. Most referred to the behaviours and decisions of management, but subjects also called attention to the amount of their paperwork, including ACNARS.

Almost two-thirds of the subjects reported stressors related to the clerical aspects of their work. A large majority of those subjects described just getting clerical work done as the stressor, either because of the time required or the obstacles.

Over half of the subjects referred to collegial stressors, including personality clashes, professional performance, and affect. The principal stressors, however, were uncollegial behaviours demonstrated by failure to cooperate, to accept professional differences, or to share the workload equitably. Stressors included differences between Home Care and Community Health. Workload was a significant stressor that emerged in the open-ended questionnaire responses for most of the stressors in the external and internal environments. Forty-five CHNs reported a workload increase during the past year. Thirty described work overload and 23 indicated work pace as stressors. Twenty-two subjects reported feeling under pressure often. For nine CHNs, the pressure was a serious problem.

Last, the majority of subjects reported stressors originating with Boards of Health composed of elected officials. To a minor extent, stressors derived from their allocation of resources for salaries, inservice, continuing education, or programs. For the most part, the stressor was the Board's narrower attitude towards prevention in health services.

To conclude, the internally and externally located stressors perceived by CHNs are inextricable from organizational factors. In the previous chapter, the data implicated organization complexity, authority structure, and formalization in addition to the technology, environment, and goals of the organizations. In this chapter, it is all the more evident that CHNs' work hazards demand an organizational analysis and approach if work hazards are to be recognized, evaluated, and controlled, if not eliminated. In the next chapter, I discuss and analyze these findings on work hazards in the context of the relevant substantive and theoretical literature.

Footnotes

1 Twenty-nine percent of the focus group participants identified issues, not hazards (e.g., under-reporting, lack of knowledge, research methodology).

2 When multiple stressors were indicated, they were assumed to be equally important.

3 Up to 3 major stressors were coded for 11 subjects.

4 Up to 3 major stressors were coded for 6 subjects.

5 Two major stressors were coded for one subject.

6 *n*=54.

7 Two major stressors were coded for 2 subjects.

8 Two major stressors were coded for 1 subject.

9 Two major stressors were coded for 1 subject.

10 Two major stressors were coded for 7 subjects.

11 Up to 3 main reasons were coded for 13 subjects. Percentages do not add up to 100% because they are based on the number of respondents who indicate each reason.

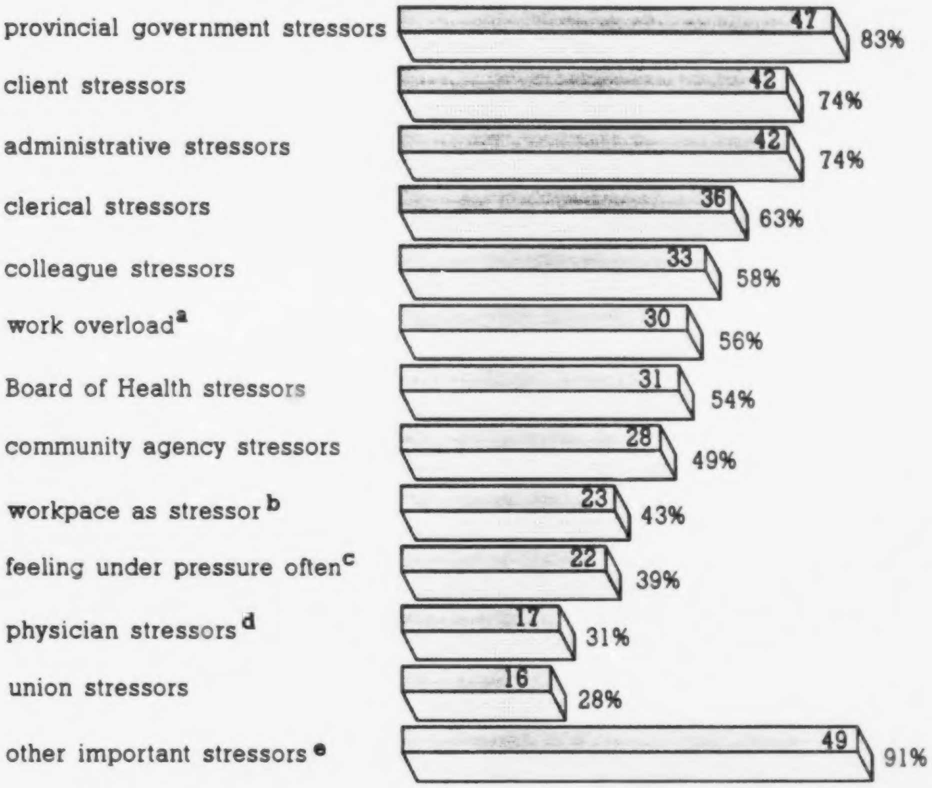
12 *n*=54.

13 Two major stressors were coded for 2 subjects.

14 The two largest health units constitute their Boards with elected and appointed members.

Figure 7. Psychosocial hazards: Overview.

Number and percent of CHNs who report:



Note. $n = 57$. Percentages do not add up to 100% because they are based on the number of subjects responding to each forced choice.

[a,b] $n = 54$.

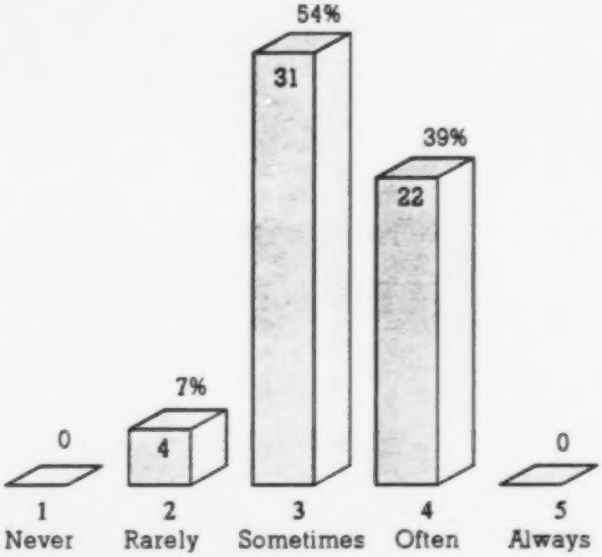
[c] $n = 54$. Reported are the number of subjects who indicated 4 on a 5 point scale where 1 = never and 5 = always. No subject indicated 5.

[d] $n = 54$.

[e] $n = 54$. A total of 49 subjects responded to one or more of the 14 forced choices for 'other' stressors. No forced choice was indicated by less than 2 or more than 30 respondents. 'Other' stressors are discussed in the text where appropriate under external or internal environments.

Figure 8. Psychosocial hazard: Under pressure at work.

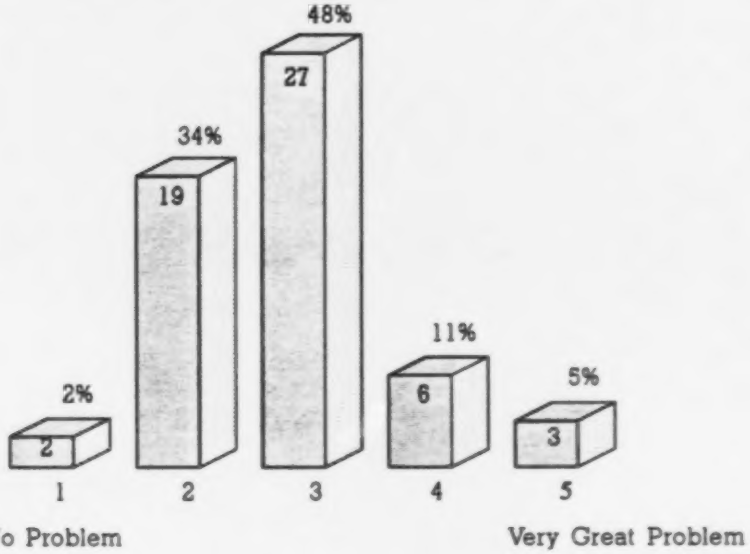
Number and percent of CHNs who report:



Note. n = 57.

Figure 9. Psychosocial hazard: Work pressure is a problem.

Number and percent of CHNs who report:



Note. n = 56.

CHAPTER 6: DISCUSSION AND ANALYSIS OF WORK HAZARDS

This chapter completes the analysis of the findings on hazards begun in Chapters Four and Five. In that pair of chapters, the questionnaire findings on work hazards were described. They were also compared and contrasted with the interview and focus group data in order to be ranked according to their relative importance to subjects. This chapter discusses the findings on hazards in CHNs' physical and psychosocial work environments in relation to the literature reviewed in Chapter Two. The analysis reveals how this research extends knowledge of the nature of CHN hazards and places in the foreground the inseparability of hazards from organizational factors. The presentation of findings for the fourth research question provides support for the connectedness. The chapter concludes by calling for an analysis that would conceptualize the linkages between work hazards and organizational factors.

Psychosocial Work Environments

Writing on the sociological study of stress, Pearlin (1989) identifies three components of the stress process: stressors, mediators, and outcomes. While this research identified stressors as perceived by community health nurses (CHNs), it did not pretend to address either stress mediators or stress outcomes which would deflect attention from social structures and organizational conditions to individuals. It was the stimulus (Lazarus & Folkman, 1984) rather than the response (a de-contextualized micro level) that was the focus. The proposal was to examine the hazards that originate in the work environment, not the outcomes in the worker, and to avoid reinforcing the individually oriented strategies that predominate in the workplace (Fielding, 1989; Hart, 1987; Landsbergis, 1988). In Chapter Two, the individualistic approach was criticized for its failure to initiate meaningful investigation into the organizational and institutional factors underlying work hazards. Cronin-Stubbs and Velsor-Friedrich (1981) are but one example of researchers who suggest that nurses may assume too much personal responsibility for stressors in the work environment, yet who advocate stress reduction at the individual level. The internalization of responsibility for organizationally generated stressors is one more hurdle to be overcome in affecting change in the workplace.

In conformity with subjects' own terminology, stressors will be used to refer to the patterns and regularities they perceived in their psychosocial environments, although the phrase psychosocial hazards would maintain the emphasis on structure, since a hazard is constituted by mass and energy. This analysis addresses the results in relation to the existing literature for CHNs on stressors in the workplace and the underlying organizational factors.

Hazard Confirmation and Discovery

Community health nurses' perceptions of stressors were consistent with the Canadian and international literature, in terms of its emphasis on psychosocial hazards and the nature of those hazards. This research, however, expanded upon the available knowledge on external and internal stressors in CHNs' psychosocial work environments by differentiating dimensions of stressors and identifying additional stressors. To begin, the review of the substantive literature demonstrated that psychosocial hazards were essentially the only category of work hazard that was addressed directly or indirectly in research on CHNs (Alberta Health, 1991c; Cohen, 1990; Haché-Faulkner & MacKay, 1985; Hoskin, 1987; Moore, 1977; West, 1989; West, Jones, & Savage, 1988; West & Savage, 1988b). Consistent with the focus of the CHN literature,[1] the major work hazards identified by the 57 subjects in this research were psychosocial in nature. Although no other research discriminated between stressors in the internal and external work environments of health units, researchers focussed principally on internal stressors and to a lesser extent on external stressors. Oriented by systems theory, contingency theory, and organizational dimensions, this research maintained a focus on both the organization and its environment.

Internal Stressors

Heavy CHN workloads were identified as stressors by Haché-Faulkner and MacKay (1985), Hoskin (1987), West (1989), and West and Savage (1988a), but subjects in this study along with West (1989) also specified the aggravation of already heavy workloads because of required coverage for sick or vacationing colleagues. Identified as a major stressor, workload increases were attributed in this study to budget cuts, increases in duties (because of delegation, orientation, supervision, or absorption), introduction of new programs, increases in health unit population, and coverage of service during noon hours. Paperwork was another major stressor. Indicated by Alberta Health

(1991c), Hoskin (1987), Moore (1977), and West and Savage (1988a), paperwork stressors were identified by these Alberta CHNs who referred to ACNARS (an inadequate activity reporting system), excessive client documentation, and administrative reports. By specifying the nature of their workload and paperwork stressors, these subjects made it clear how decisions within the organization and by institutions in its environment, not individual idiosyncrasies, lie at the root of their stressors.

Few earlier studies alluded to administrative behaviours and decisions although P.M. Morrison (1983) described potential stressors for managerial CHNs due to the management style and expectations of medical officers of health and West (1989) referred to inadequate staff: managerial ratios and communication between staff and managerial health visitors (HVs). These Alberta CHNs disclosed broader concerns about health unit management styles, managerial skills, and inconsistent managerial behaviours with health unit staff rather than narrower concerns about internal subunit management. The ratio of staff to managers was simply not an issue, but the management of the organization was.

While West and Savage (1988a) and West (1989) identified inadequate clerical support for the staff health visitor whose skills could be used more appropriately, and P.M. Morrison (1983) reported a shortage of support staff for managerial CHNs, the subjects in this study were even more specific about their clerical stressors. Although they described concern about the calibre and ethics of clerical staff performance, they concentrated on hindrances to getting clerical work done which derived from sheer quantity of work, lack of clerical staff cooperation, fragmentation of clerical services, and unclear support staff responsibilities. Again, their specification of the stressors only emphasized the organizational origins of psychosocial hazards and the indication for administrative solutions.

Professional colleagues might have been included in Haché-Faulkner and MacKay's (1985) "interpersonal relationships" category of stressors, but they were described with more certainty by West and Savage (1988a) who referred to "collegial difficulties". These research subjects, however, were more explicit and specified colleagues' affective behaviours or professional performance as stressors. Furthermore, they described uncooperative behaviours, inequitable work-sharing, and failure to accept professional differences as stressors. Only in this research did subjects refer to the difficulties between colleagues in two distinct nursing subunits within the organization. Inadequate communication, differing professional orientations,[2] and inequities in funding were the primary factors in the development of those stressors. Although individual characteristics might become more relevant when discussing collegial stressors, for Denison (1990), the organizational culture plays a role and is subject to manipulation by management.

The final internal stressor has not clearly surfaced in any other research except for a brief mention in the study to streamline operations in the North York Public Health Department (1984). Researchers there recognized that the Board of Health was not aware of CHNs' professional practice. Subjects in this research referred to the varied, usually non-medical (non-health) backgrounds of Board members who might change with elections every three years and whose governance philosophy varied between tight control and non-interference. Porter-O'Grady's (1991) discussion of governance versus operations management sheds light on the underlying issue which may or may not be appreciated by subjects. Add a perceived Board lack of interest or low priority for health, and stressors attributed by CHNs to Board performance only increased. Subjects specified resource allocation and attitude towards preventive services as internal stressors originating with Boards of Health.

Funding reflects the status of the general economy and Boards transmit community and societal values, yet lobbying activities are an option that is available to health units. "I know they [Board] have gone to the government before when they were concerned that they weren't getting enough monies," reported one CHN. Although the Boards are represented by the Health Unit Association of Alberta (HUAA), few CHNs referred to it. Those who did, had the perception that HUAA minimizes workplace hazards for CHNs. "It had nothing to do with us the staff as far as . . . supporting us. It's a management thing. It's like the hospital association," explained one CHN. According to another, "I get the feeling . . . that it's kind of poo-pooed by the Health Unit Association, that we are in very safe jobs and why should we be asking for any changes." During negotiations over a joint occupational health and safety committee, the first CHN above reported that HUAA's response was "'Health units are, don't have a problem with that so we don't need that'." Since the Boards are legislated under the Public Health Act

(1984) and comprise the Health Unit Association of Alberta, structural and not individual reform would be indicated.

External Stressors

The present literature for CHNs does little to address their stressors in the external environments of health units. Consequently, this research considerably increased the available knowledge on external stressors in addition to internal stressors. Alberta Health (1991c) established that CHNs were dissatisfied with government efforts to resolve working conditions and staffing issues; Cohen (1990) identified lack of funding and hiring freezes as stressors for managerial CHNs; Haché-Faulkner and MacKay (1985) reported shortages of staff as one of the two most frequent stressors for public health nurses; and Clarke, Beddome, and Whyte's (1990) future-oriented conceptual framework for community health nursing included improved resource allocation as a component. With regard to government stressors, CHNs in this study specifically linked staff shortages, heavy workloads, program changes, enforced prenatal instruction, a public confused by service inconsistencies between health units, and threats of lay-offs, to government fiscal decisions. Those were their *major* stressors. Moreover, they described inconsistent government policies and directives within and between levels of government. Although regionalization was given impetus by the provincial government and became a significant stressor for CHNs, Nancy Betkowski, the Alberta Minister of Health ("Find Alternatives", 1991), may have defused the resistance of health units to the concept.

The political and economic forces that have a bearing on CHNs' stressors cannot be ignored. Even human services are distorted by society's values, including profit, efficiency, and sexism. These values contribute to the perception that the service sector draws profits away from the economy without expanding the private sector (Gartner & Riessman, 1974) except perhaps for pharmaceutical and medical supply companies. Cost effectiveness is consistent with society's value that economic efficiency is good (Ostwald & Williams, 1987). Although low risks might be desirable, an economist's view is that market control should be used for job risks (Viscusi, 1983). Elling (1989) argues that the origin and persistence of occupational health and safety problems are fundamentally linked with the social relations of production. Grunberg (1983) describes three reasons for management resistance to the institution of health and safety practices: the costs outweigh the perceived benefits, employee safety and health would be placed at the centre of decision-making, and higher safety costs would reduce organizations' competitive [viz., efficient service] position. According to Strand and Johnson (1980), in occupational health and safety "incentive for prevention activity is related to costs borne by each economic agent" (p. 259). For Wegman, Boden, and Levenstein (1975), "occupational health is as much an economic and political problem as it is a medical and technical one" (p. 26).

Costs for nonhuman capital are carried by the organization, but the costs for injured or ill workers are distributed across employee (e.g., drugs), organization (e.g., WCB assessment fee), and society (e.g., health care insurance) and become less apparent to the employer. For example, even though HBV vaccination might prevent hepatitis B cases very successfully (Lahaye, Strauss, Baleux, & van Ganse, 1987), it is the health insurance plan not the employer that benefits from health cost reduction. When turnover, sick leaves, and recruitment become problematic, management will attend to psychosocial hazards in the workplace (Gardell, 1982). Reactive measures following injury or illness are a less expensive direct cost to management than are measures to eliminate hazardous conditions (Wegman et al., 1975). For Walters (1985), when even minor costs are not undertaken it raises the issue of control in the workplace, not conflict over health and safety.

If health is personal capital which depreciates or fluctuates, how are these health-promoting organizations perceived by their employees as responding to the cost of protecting vulnerable employee health? To begin, each of the health units is 100% publicly funded. No questionnaire, interview, or focus group question specifically addressed the political economy of worker health and safety,[3] but subjects gave their perceptions on the cost factor. "Money . . . . everything relates back to money and funding the budget," explained one CHN. "Whatever is cost appropriate, I guess, is what things have been boiled down to" and "the health unit is willing to do what they can. But I suppose within boundaries, what they're able to afford," were additional comments. "We as a group wanted a security system of some kind and . . . basically we didn't get that and I believe it boiled down to the fact that there wasn't money there for it," was another. Other subjects stated, "they don't look at . . . the reasons why we wanted it [cellular phone], it's just 'It's too costly'" and "we had to fight for those [sharps containers] too . . . . because they cost." A managerial CHN in one health unit explained, "Some things are easy to resolve, I suppose. It depends what it is . . . . depends what it is and depends what the cost is." She continued, "when the building was built the air conditioner was built too small . . . . Even though we're renting the building, they say we have to pay for the air conditioner ourselves, which is over seventy thousand." By contrast, a managerial CHN in another health unit showed that efforts can be made. She stated, "staff development has not been moved [from the budget]. It hasn't gone up either but it's not been chopped one cent in the past five years . . . . we've been able to maintain it. So staff morale is very important."

It can be appreciated from subjects' comments that political and economic forces were quite visible at the subunit level. Not only were extremes of budget control at this level apparent (total control versus no control), but also variations in budget priorities across the five units were evident in terms of stressors and hazards (e.g., staff development, provision of gloves). At the organizational level, economic forces were discernible with respect to ownership and stewardship of the physical plant (e.g., replacement of components of HVAC system), staffing decisions, and formalization of surveillance structures. It was apparent from the differences across the five organizations that some economic-based measures for controlling work hazards were within the realm of possibility and could be introduced at subunit and organizational levels. Five health units allocated their resources for the prevention or control of hazards differently, however.

While one organization implemented an employee assistance program (EAP) and two others began plans to develop an EAP, two others didn't. Although two health units had collective bargaining units under the labour legislation, neither included a joint health and safety committee in its contract. Inter-organizational linkages exemplified by group bargaining influenced that outcome. Despite the statistics about risk of HBV infection, three health units underwrote the cost of HBV vaccination for their CHN employees, two didn't. All units were covered by the Workers' Compensation Board (WCB), but because of the low assessment of risk, WCB fee assessments were likely a minor concern to Boards of Health. Compensation provides disease and injury surveillance for WCB-legitimated situations and complements hazard surveillance. According to Sundin, Pedersen, & Frazier (1986), "when cause (hazard) and effect (disease) surveillance systems are integrated and linked, the potential for discovery is enormous" (p. 1083). Disease surveillance, however, contributes to prevention only after adverse effects on workers have been recognized (Walters, 1985). Nevertheless, one subject described relief at being covered by workers' compensation:

> In the last couple of years . . . the Board has given . . . Workman's [sic] Compensation coverage so that . . . lessens the stress of what if I fell and broke my leg . . . . I couldn't believe it when we got Workman's [sic] Comp. Obviously they found the money somewhere. So we are now covered.

What occurs at the subunit and organizational levels must, of course, be located within the political economy of health promotion, as must enforcement of health-related legislation which depends upon institutions of the government that also function under economic constraints. Paralleling Handy (1991) who studied the role of welfare institutions in occupational stressors for psychiatric nurses, this research provides some indication of the tension within the provincial government regarding the goals of health promotion for the public, health promotion for (CHN) workers, and economic restraint.

In contrast to government stressors and institutional and societal forces, client-centred stressors lend themselves to an internal organizational response (e.g., policies, procedures, inservice education). Haché-Faulkner and MacKay (1985) identified only patient care as stressor. West and Savage (1988a) identified a difficult case category that classified client problems by focus (e.g., mother, father, child), by affect (e.g., anger, aggression, violence), by language (e.g., non-English speaking), by psychiatric problem (e.g., maternal depression), and by non-accidental injury (e.g., abuse). While Alberta CHNs reported similar stressors, they also identified Native culture, communicable disease (e.g., outbreaks, HIV, HBV), and isolated clients as stressors. Organizational level responses to these stressors could include inservice education as well as orientation programs that reflect the formalization of policies and procedures for protecting health and safety.

Only West (1989) and West and Savage (1988a) referred to professional relationships as stressors (i.e., liaison work with social workers, physicians, etc.). The subjects in this research identified several community agencies and institutions with whom communication, coordination, and accessibility became stressors. They especially reported changes in these relationships as a result of the overall economic downturn and widespread budget cuts. Although some CHNs experienced positive relationships with community physicians, others believed that their autonomous practice contributed to the problems with those relationships. While subjects acknowledged some success at the individual level of encounter, the organizational level of response, especially in times of economic restraint, required further consideration. Interorganizational collaboration and coordination might make a difference.

Finally, consistent with Alberta Health's (1991c) findings for community health nurses, unions were not significant stressors. This may reflect the fragmented collective bargaining status of the health units, the presence of more than one union in community health, professional ideology, and group bargaining practices. As well, it might reflect a management hostile to any discussion of unionization and CHN concern for job security. It could also indicate that the bitter strike of 1985 was far enough removed in 1992 that it was a minimal influence on subjects' responses regarding unions.

Although unions could play a vital role in occupational health and safety, this does not appear to be the situation in health units. Subjects recognized the option of processing a grievance through a collective bargaining unit if occupational health and safety were included in the contract. This was not the case, although one CHN allowed, "The fact that we're a member of a large union gives us a sense of security and maybe a false sense of security as a procedure . . . for grievances." She continued, "I don't know where they [the union] fit in. I'm really not too sure. All I know is that it's sort of like a blank umbrella that . . . we psychologically feel is there." Another unionized CHN explained:

> We could utilize . . . their expertise if we needed to. In other words, if something happened and we felt that we needed more assistance in looking at the problem we could go to them and get their expertise because of what they've done with the hospitals.

As noted, JOHS Committees had not been included in a final contract for any health unit in this sample. Joint bargaining with other health units played a role in this, but also, "most people wouldn't go on strike, for example, over a health and safety committee," explained one unionized CHN.

To review, the existing literature on CHNs identifies and describes the majority of these CHN stressors only superficially, thus failing to provide depth or breadth to the description of stressors. Lacking more specific information, the related research provides very limited guidance for an organizationally oriented analysis. Moreover, researchers have relied heavily on the use of scales to obtain information about CHN and hospital-based nurse stressors (e.g., Alberta Health, 1991c; Haché-Faulkner & MacKay, 1985; Parasuraman & Hansen, 1987; West et al., 1988; Yu, Mansfield, Packard, Vicary, & McCool, 1989). By using individually oriented scales that were developed without a comprehensive assessment of CHN stressors, researchers only perpetuate the status quo, reinforcing inaction at the organizational level of response. On this point, the theoretical and empirical lacunae regarding organizational factors in research on CHNs' work hazards converge.

Guided by systems theory and the structural and contextual dimensions of organizations, this present research provides more insights. It avoids the limitations of predetermined categories by using open-ended as well as closed items on the questionnaire and it seeks information about stressors in the organization's environment in addition to the stressors within the organization. By obtaining greater specificity regarding stressor *characteristics*, it more clearly demonstrates the relationship of the organizations to CHNs' stressors. Further, it sets the stage for a continued organizational focus by recognizing and classifying stressors according to their location in the internal and external environment of the health unit organizations.

In a review of the literature on women and work-related stress, Haw (1982, p. 141) draws one conclusion that is especially relevant for this research: "Both the objective environment and perception of it should be investigated to determine to what extent the actual environment is implicated in the genesis of stress and stress-related disease." The theoretical paradigms in use in the occupational health field have not guided researchers to investigate the organizational dimensions of psychosocial work hazards. Informed by organization theory, this component of the research on CHNs' perceived work hazards sheds light on a number of organizational dimensions linked with CHNs' stressors and underscores an important gap in our theoretical understanding of the basis of work hazards. If organizations are to take seriously their fiscal, legislated, moral, and social responsibility to minimize workplace hazards, an organizational perspective is fundamental to a comprehensive understanding of work hazards.

Briefly then, this employee subunit of a human service organization underscores the limited available CHN research and conventional wisdom that psychosocial stressors predominate over more tangible hazards in the service sector. It provides evidence to implicate the organization in the genesis of those stressors and at the same time demonstrates that factors in the organization's environment are also stressors. One further clarification is necessary before continuing the discussion and analysis of work hazards for CHNs' *physical* work environments. Originally, the literature on psychosocial factors was heavily weighted to the stressors of the male workforce (Haw, 1982; Lowe, 1989). Feminist researchers opened up for scrutiny the stressors for women not only in the public sphere of paid work, but also in the private, unpaid sphere. This present research on the *organizational factors* associated with *stressors* logically centres on the public sphere of women's work.

As discussed in Chapter Two, the perspective taken here represents the liberal feminist approach which focusses on women's equal access to the opportunities available to men (Saunders, 1982). In this context, that means equal access to the resources for recognizing, evaluating, and controlling work hazards. Given that women's work hazards could be different from men's because of occupational segregation by sex (Haw, 1982), it is all the more important that work hazards in an organizational context be subjected to closer examination. Moreover, stressors in paid work are considered to affect health independently of stressors in unpaid work (Klitzman, House, Israel, & Mero, 1990; Lowe & Northcott, 1988). Finally, placing the site of gainful employment at the centre of investigation maintains the focus on organizational rather than individual characteristics, reinforces the use of the 'job' model, and avoids recourse to the 'gender' model (Feldberg & Glenn, 1979) which otherwise deflects attention from the work environment onto the individual. Continuing the focus on organizational factors and their relationship to CHNs' work, the next section is a discussion of the hazards that CHNs perceived in their physical environments, according to the rank order of importance of the hazards to these subjects.

Physical Work Environments

Community health nurses perceived actual or potential hazards in their physical work environments, but considered them less important than their psychosocial hazards. Safety hazards were at the forefront, yet physical hazards were also important. Chemical and reproductive hazards were clearly not a priority, but biological and ergonomic hazards could not be ignored. Since research on CHNs' physical work environments has been extremely limited and has addressed only safety hazards at best, most results are discussed in relation to the broader literature on health care workers.

Hazard Confirmation and Discovery

Safety Hazards

Consistent with the very limited Canadian and international literature, safety was a prime concern of CHNs. Virtually 100% of the sample perceived risks to their safety. Since subjects reported the *potential* for injury (i.e., perception of risk), this may explain why actual psychosocial stressors were considered to be the most significant hazards, although it may also reflect the relative number of stressors. Alberta Health (1991c) established CHNs' dissatisfaction with safety in terms of the issues of travel, parking, client violence, and the physical environment and Hoskin (1987) provided comparison data for seat belt use. As personal protective equipment, the seat belt was used by 95% of the CHNs compared with 60% of the hospital and community-based nurses in Hoskin's sample. Not only were the CHNs complying with Alberta legislation, but they were also reporting behaviour that is congruent with one of their most frequently cited concerns about safety, the risks associated with travel. While West and Savage (1988b) briefly referred to the problem of weather, the CHNs in this study reported weather conditions plus many more dimensions to the hazard of travel: road and vehicular conditions; access to survival gear; access to telecommunication; nature of client directions; and individual driving ability. Even the health unit parking lots were reported for icy conditions, poor illumination, and risk of attack. Spinner (1991) notes that there are no comprehensive statistics regarding work-related motor vehicle incidents, but that available statistics report 20% of occupational fatalities to be due to motor vehicle accidents.

Had only hospital-based nurses been surveyed for hazards to nurses, both travel and dogs, the other most frequently cited hazards by CHNs would have been missed. Dogs on clients' property were a hazard appreciated by even the most unconcerned subject and by British health visitors. Narrow misses, actual dog bite, and decisions to be immunized against rabies attested to the hazard.

One facet of safety introduced by the Alberta CHNs relates to working alone in unsupervised or isolated buildings which is closely associated with the larger issue, also identified in the British literature, of abusive clients. A point in their favour is that subjects as a rule were providing a service that involves no cash exchange. Greater safety risks exist for service providers who must handle money in an interaction (Davis, 1987; Kraus, 1987; Roberts, 1990/91). To the extent that subjects provided services to clients who were alienated, affected by tough economic times, unemployed, connected with the criminal element, or psychologically unstable, the risk to safety remained. The actual work injuries reported by CHNs corroborate the risk of injury from dogs, motor vehicle accidents, and clients.

At first glance, dogs, travel, and clients appear beyond the realm of organizational control, but when hazard dimensions become more explicit the relevance of organizational action becomes apparent. For example, inservice on defensive driving, self-defense, and dealing with potentially volatile situations, and orientation programs for new employees that acknowledge and prepare CHNs for hazards at work are but two approaches. Moreover, the proactive organization establishes inclement weather policies, improves lighting, implements an alarm or security system, assures the maintenance and good condition of health unit vehicles, and establishes formal mechanisms for bringing safety issues to management's attention. All these actions are under organizational not individual control and send a clear message to employees that health and safety matter to the organization. When less than half of the subjects have access to specific collective mechanisms (e.g., joint occupational health and safety committee), union resources on health and safety, or employee assistance programs, what message are the organizations giving their CHN employees?

Finally, subjects' concern for their personal safety must be placed within the broader context of nurse abuse. The phenomenon has been addressed in the literature since the 1970s and for various social psychological reasons has only been confronted broadly by nurses in recent years (Hadley, 1990; McGuinness, 1992). The social structural reasons are of interest here. Workplace assault has been associated with shortstaffing, inadequate training, ineffectual management guidelines, nonsupportive management, reactive management practices, and management ideologies that abuse is to be expected in the public sector or that the victim is to blame (C. Crawford, 1990; Dingwall, 1984). No individual should be expected to endure verbal or physical abuse at the workplace, but abuse against employees in the professional, office, and retail sectors is growing (Roberts, 1990/91).

Community health nursing is intrinsically a hazardous occupation because of the nature of client problems, home visiting, and work in isolated areas (Dingwall, 1984). Add evening work, lack of security systems, and a reactive management and the potential for problems increases (C. Crawford, 1990). Especially in health-promoting organizations, it should not be ignored that injuries are predictable and preventable (Francescutti, Saunders, & Hamilton, 1991). The proactive management considers its employees to be its most valuable resource and takes appropriate preventive action. It acknowledges the hazards, develops written guidelines, prosecutes offenders, and has an intervention program in place for employees who may be victims of abuse (C. Crawford, 1990; Marck, 1992; McGuinness, 1992). Repercussions of employee abuse extend beyond the individual physical and psychological effects to the organization and to the profession (McGuinness, 1992).

Physical Hazards

Physical hazards deriving from energy sources in the indoor environment received no attention in the community health nursing literature although the supplementary literature recognized thermal, electrical, acoustic, and radiant exposures among others (Barrett, 1991; Cluff, 1986; Coleman & Dickinson, 1984; J. Crawford, 1991; Donoghue, 1983; Marha & Charron, 1983; Morey & Woods, 1987; Olishifski & Plog, 1988; Zoloth & Stellman, 1987). Vibration as a hazard for health care workers was essentially ignored, but subjects in this study reported vibration from vehicles and from equipment in buildings. Although vibration may commonly affect the hand and arm when manually operated vibrating tools are used (Corbet & Reesal, 1986), these subjects were describing whole body vibration, a form more common to transport drivers and operators of heavy duty equipment (Guidotti & Cottle, 1987). In a critical review of whole body vibration, Helmkamp, Talbott, and Marsh (1984) summarized the known health effects within the context of other stressors (e.g., noise) and the characteristics of the vibration. Grzesik (cited in Helmkamp et al., 1984) concluded that women appeared to be more susceptible than men to the effects of whole body vibration. Helmkamp et al. (1984) indicated that workplace monitoring should include sources of vibration and any interactive effects from other physical hazards. Since one-fifth of the sample reported exposure to vibration, a hazard not reported elsewhere for community-based nurses, vibration merits consideration.

Sick building syndrome. The vast majority of subjects described problems with temperature control, humidity, and ventilation in their offices, problems associated with the heating, ventilation, and air conditioning (HVAC) system. Indoor air quality in particular became an issue in the 1970s linking energy conservation measures with increased worker health complaints (Jenish, 1990; Nguyen, Goyer, & Donnini, 1988). "The indoor air pollution problem has become one of the most important public health and environmental issues facing Canadians" (Walkinshaw, 1991). Microorganisms from carpets and humidifiers, volatile organic compounds from carpets and furnishings, saturated air filters, bioeffluents from human beings, sealed windows, inadequate HVAC systems, inadequate fresh air intake, and exhaust ducts placed too close to fresh air ducts all contribute to indoor air pollution (Bakker, 1976; J. Crawford, 1991; Jenish, 1990; Mendell & Smith, 1990; Nguyen et al., 1988; Price, 1991; Walkinshaw, 1991). A British researcher, J. Crawford (1991) also found a difference in quality between publicly owned buildings and buildings owned by the private sector, with a corresponding difference in complaints of sick building syndrome (SBS) by public employees.

According to the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), when more than 20% of employees at a worksite are dissatisfied with their environment, there is a problem (Nguyen et al., 1988). In this sample, over 50% identified a problem, but they were at multiple worksites. Although psychosocial factors have also been identified in SBS (Boxer, 1990; J. Crawford, 1991; Price, 1991), it is the organizational factors that are of interest here. Despite the fact that increased ventilation rates reduce employee discomfort (H. Levin, 1991; Morey & Woods, 1987), Walkinshaw (1991) argued for prevention at source with better design, operation, and maintenance of HVAC systems, better selection of materials and furnishings, and dissemination of information. H. Levin (1991) in particular argued for pollutant source control, but recognized that owners and occupants have less interest in treating causes than in simply reducing the effects, as with increased ventilation. Other factors in the organization were made evident by J. Crawford who described perceived control over the workplace, time spent in the office, and office-sharing or open office plans as factors in SBS-related complaints. Crawford indicated that research was needed in relation to stressors, workload, and perceptions of the work environment and that building, health, and organizational assessments were all necessary when confronting SBS. Standards for indoor environments as well as material and product emissions are not yet a reality in Canada, but according to Walkinshaw (1991) it is but a matter of time. When regulations are not in place, however, employers are less motivated to improve ventilation and air quality (Briscoe, 1990).

Fewer complaints were made about dust, noise, and lighting than were reported about SBS by subjects. While dust is associated with SBS (Skov, Valbjorn, & Pedersen, 1990), noise is cumulative and contributes to annoyance if not hearing loss (Olishifski & Plog, 1988; Throckmorton, 1980). It may be measured using a sound level meter (Nguyen et al.,

1988) and is subject to government regulation (Occupational Health & Safety Act, 1980). Similarly, illumination may be tested with a lux meter and compared with standards (Nguyen et al., 1988).

Subjects did not identify hazardous exposures to radiation, but the equipment they used (e.g., VDTs, microwaves) could be a potential source of nonionizing radiation or very low frequency radiation. Monitoring of potentially hazardous equipment should be conducted for the purpose of limiting the degree of any exposure (Zoloth & Stellman, 1987). This too lies within the realm of management, not the individual worker.

In sum, the physical hazards reported by CHNs potentially are subject to resolution at an organizational level of response; individuals alone cannot bring about the necessary changes. In the case of vibration of equipment or vehicles, administrators in health unit organizations supervise the supply and provision of vehicles for the use of their employees and arrange contracts for buildings and building maintenance. Noise, lighting, and dust levels are subject to government regulations that are implemented at the organizational not individual level. Sick building syndrome is closely related to maintenance of the HVAC system, workspace crowding, and selection of materials and furnishings, all under organizational control.

Ergonomic Hazards

Similar to physical hazards, ergonomic hazards are also rooted in an organizational context. Their origins and solutions lie under the control of administrators responsible for purchasing equipment, scheduling direct client services, or planning orientations to the workplace. Consistent with the literature on hospital-based nurses who use nonadjustable equipment and repetitive motions in physically demanding work (Raniere, 1989), subjects reported lifting heavy equipment, accommodating to uncomfortable furniture and equipment, and carrying out repetitive movements associated with client direct and indirect services. In addition, CHNs described prolonged sitting in vehicles or clinics, uncomfortable office furniture, and having to do furniture set-ups for classes or meetings. Since only nineteen subjects used VDTs, and most less than weekly, those ergonomic stressors were minimized.

Awkward positions, repetitive movements, static postures, work pace, and demands for muscular force are associated with musculoskeletal disorders, one of the most pervasive and serious disorders affecting workers (Keyserling & Chaffin, 1986; Wegman & Fine, 1990). Employees at any age are susceptible to ergonomic hazards, but if age-related changes to hand grip strength, reserve capacity, and reaction time (Arking, 1991), perceptual needs at computer stations (Tindale, 1991), and decline in skeletal muscle strength (Spence, 1989) are taken into consideration, the median age of these subjects has particular relevance for ergonomic hazards. One-half of the subjects were over 41 years of age. Because the human body adapts to poor work design, there may be few acute warnings, but over time the cumulative demands take their toll and symptoms appear (Ayoub, 1990). Occupational longevity (job seniority) increases the value and experience of a workforce, but also the development of work-related health problems (Lessor, 1984). For McNeely (1990), longevity does not increase the perception of long-standing risk by long-term employees.

Ergonomics are "a management issue" (C. Edwards, 1992, p. 14) that requires integration of organizational operations, including mechanisms for risk perception as well as structural interventions. For example, the provision of adjustable furniture and equipment by the employer is recognition of the physical variations among employees; worker input into a joint occupational health and safety committee raises awareness. According to Hunter (1991), ergonomic hazards will be the issue of the 1990s. Certainly in this sample of experienced CHNs, both the association between ergonomic hazards and age-related changes and the nature of ergonomic hazards for all subjects must be considered.

Biological Hazards

Along with hospital-based nurses (Fleming, 1987), the CHNs in this study perceived exposures to bacteria, viruses, and parasites at work. Almost all subjects reported immunity for polio, mumps, and red measles (viruses) and for diphtheria and tetanus (bacteria) most of which could be encountered among the populations they serve, but not commonly if the immunized pool is large. With respect to the four pathogens considered to be the most significant biohazards for hospital-based nurses (HBV, HIV, rubella, and tuberculosis), the CHN subunits reported virtual immunity to rubella, but considerably lower protection against HBV and tuberculosis, and of course no immunity to HIV for which there is no vaccine in 1992. Immunity signifies the body's resistance to infection by harmful agents based on the possession of antibodies that have specific action on communicable agents or their toxins. It is acquired naturally by infection or artificially by inoculation and lasts months to years, but even under optimal conditions vaccines vary in their effectiveness (J. Turner, 1984).

A number of factors suggest that CHNs in all five health units should be protected against HBV. First, three of the health units have already underwritten the cost of HBV vaccine for their CHN employees, presumably basing the expenditure on a sound rationale. Second, the Alberta government is considering the introduction of routine HBV immunization for children (Dr. Kenneth Yu, personal communication, March 26, 1992). Third, the Occupational Safety and Health Administration (OSHA) in the United States proposed that employers provide free HBV vaccine to employees with potential exposures to blood or other infectious material at a frequency of at least once per month (Goldstein & Johnson, 1991; Mauskopf, Bradley, & French, 1991). Fourth, the Health Unit Association of Alberta passed a resolution at its most recent annual meeting that the Minister of Health be asked to provide funding for the vaccination of Alberta health care workers against HBV (Alberta Association of Registered Nurses, 1992). Finally, the risk of acquiring HBV infection from needlestick is between 6% and 30%, depending upon the study (Brattebo, Wisborg, & Sjursen, 1990; Friedland, 1990; Liss et al., 1990; Mauskopf et al., 1991; Vlahov & Polk, 1987). This compares very negatively with the risk of acquiring HIV infection which is well below 1% (Beaufoy, 1989; Brattebo et al., 1990; Hoffmann, Weber, & Rutala, 1991; Kuhls et al., 1987; Stock, Gafni, & Block, 1990; Vlahov & Polk, 1987).

Two issues with respect to HBV and HIV exposure require elaboration: needlestick incidence and glove use. By virtue of their mandate to immunize (Public Health Act, 1984), CHNs are exposed to risk. Needlestick injuries are a route of entry for both HBV and HIV (Astbury & Baxter, 1990; Carter-deCarteret, 1987; Liss et al., 1990). Community health nurses have access to puncture-resistant containers for disposal of needles and syringes and the majority follow recommended procedures (Centers for Disease Control, 1989; Elmslie & O'Shaughnessy, 1988) for not resheathing needles. Among the 31 CHNs who reported ever having a needlestick injury, however, were 10 who reported a needlestick during the past year. This may partly reflect the 14 CHNs who recap needles. But it also may reflect limited access to puncture-resistant containers. The findings raise a number of questions to be addressed in future research. Are containers at every workspace where injections are given? Further, are clinic room set-ups conducive to prompt and safe disposal of syringes and needles? To what extent does the number of needlesticks reflect shortstaffing or CHNs who are covering for sick/absent colleagues and concerned about completing their own workloads? Are needlesticks occurring at the end of an all-day clinic when CHNs are tired?

Consistent with the literature (Carter-deCarteret, 1987), under-reporting is an issue in this sample. Among the 31 CHNs who experienced a needlestick, only 10 reported it to the supervisor. At the same time, most subjects reported the existence of a needlestick policy in the health units. It is possible that under-reporting occurred because of a negative organizational response (e.g., stigma, poor safety evaluation) that in effect blamed the victim and failed to consider the context of the injury, such as long clinics, lack of puncture-resistant containers.

It might also reflect needlestick injuries that occurred prior to the recognition of HIV as a risk to health care workers and despite the known risk for HBV. At the individual level, under-reporting means that the affected employee fails to obtain the necessary data for the immediate response to the incident and the organization lacks information for long-range planning (Brent, 1990).

Most CHNs did not use gloves to give injections. While gloves don't prevent a needlestick injury, they do protect broken skin and direct contact with blood. Of the three main routes for HIV infection (open wound, mucous membrane splash, needlestick or other percutaneous exposure), broken skin and needlesticks are most relevant for CHNs. Among the 53 subjects who reported giving injections, 10 used gloves if they had broken skin on their hands, 23 used gloves if they were exposed to blood. Are gloves made readily available? While 19% of subjects in the focus groups acknowledged that the cost of the gloves to the health unit was a factor in using them, this did not account for the disparity. The actual use of gloves might partially reflect the 17 CHNs who perceived the potential for HBV or HIV infection as a stressor or the limited number of CHNs who reported drawing blood, but still does not explain the differences. Thirteen of the CHNs who gave injections never used gloves. The remaining 40 used gloves at some point, but only 3 reported using gloves to give all injections. There are not sufficient data to fully understand what was happening and further investigation is necessary. This may be an example of the interplay between social psychological and social structural bases of workplace hazards.

Tuberculosis (TBC) appears to be a risk for health care workers because of the pool of TBC-infected individuals that continues to exist (Bailey & Coutu-Wakulczyk, 1991) and the atypical tuberculosis encountered in 5-10% of HIV-infected individuals or in geriatric patients (Hoffmann et al., 1991). Because of effective medications for tuberculosis and the decline of the infection in the general population, attitudes about tuberculosis have relaxed but this response is premissed on opportune diagnosis of new or reactivated cases (Bailey & Coutu-Wakulczyk, 1991; Carter-deCarteret, 1987). Studies show greater TBC skin test conversion among health care workers in TB-prevalent areas (Ktsanes, Williams, & Boudreaux, 1986). Because of regional variations in TBC prevalence, ineffective and costly practices to prevent TBC-infection need to be re-evaluated (Bailey & Coutu-Wakulczyk, 1991; Ktsanes et al., 1986). Infection control programs in public health should include surveillance, inservice education, and effective policies and procedures (Hayden, 1990). When less than half of this sample reported protection against TBC, it might reflect a re-evaluation of policy within the health units or it might indicate greater indifference to a disease that historically was much more threatening.

Chemical and Reproductive Hazards

Community health nurses dismissed chemical and reproductive hazards in their work environments by reporting exposure to few chemicals and no evidence of negative reproductive outcomes. Most of the chemicals that they handled on a regular basis were disinfectants or cleaning agents. Because they handled biological materials that were potentially infectious and hazardous, and by virtue of exposure to even some chemicals, all CHNs should have received orientation to WHMIS. Under the legislation, WHMIS education is mandatory for workers using biological agents and chemicals designated as hazardous (Liss et al., 1990; Smith, 1988). A WHMIS orientation would have introduced all CHNs to Material Safety Data Sheets (MSDSs), WHMIS supplier labels, and an educational process regarding workplace exposures and the significance of labelling and MSDSs. Moreover, it would have exposed them to the type of education that their worker-clients might receive.

Because of smoking bans in the health unit buildings, CHNs enjoyed reduced exposures to tobacco smoke. The no-smoking policies contributed to a cleaner air environment although that was inextricably linked with the quality and maintenance of HVAC systems, noncompliant smokers, volatile organic compounds from new or renovated offices, and sealed buildings. In 1988, Warren reported that only 7% of Canadians worked in smoking-restricted environments. By 1990, 24% of the respondents in the 1990 Alberta Study reported that a total ban on smoking existed in their workplace (van Roosmalen, 1991). Community health nurses at least enjoyed a minority advantage.

The lack of exposure to high risk chemicals has relevance for reproductive health. Compared against lists of chemicals associated with reproductive effects (Hatch & Stein, 1986; Canada Safety Council & Canadian Advisory Council on the Status of Women, undated), subjects in these health units have no risk of chemically induced reproductive effects. Unlike hospital-based nurses, CHNs did not indicate exposure to waste anaesthetic gases, antineoplastic drugs, and ethylene oxide for sterilization. Radiation sources (physical hazard) that place reproductive health in jeopardy were also very limited in CHNs' work environments. Video display terminals were used only weekly or less by the majority of the 19 subjects who reported using VDTs and are still the subject of controversy with respect to reproductive health. Microwaves, another potential source of radiation, were used by very few subjects. Biological hazards pose clear reproductive risk, but most CHNs reported immunity by inoculation or by having had the disease. The greater risk appears to be HBV which can be transmitted to the fetus and for which effective vaccines are available. It seems logical, and based on scientific rationale, that all CHNs should be immunized, but cost appears to be a factor. Since 26 subjects were between 26 and 40 years of age, those CHNs could become child-bearers and should be considered at risk.

One final important point must be made. Although the lack of concern about risk to reproductive health in these workplaces appears to reflect work environments free of reproductive hazards, two influential factors must be considered. First, the average age of CHNs in this sample was 41.5 (median = 41.0) which suggests the possibility of recall bias (Haldane et al., 1969; Lemasters & Selevan, 1984; Vianna, Kovasznay, Polan, & Ju, 1984) and/or lack of interest in the topic due to completion of child bearing. Over 60% of the sample had children, three-quarters of whom were over the age of five. Second, the prevalence of congenital defects is calculated to be 2-3% of the population (M. Rosenberg, 1986; Valentine & Plough, 1983). A very large sample[4] size would be needed to demonstrate even a two-fold increase in defects. Despite the clear image that emerges of a subunit that did not consider its reproductive health at risk, reproductive hazards cannot be discounted as hazards to the health and well-being of this sample.

Summary and Conclusion

The hazards that CHNs perceived in their work environments lend themselves to administrative, engineering, housekeeping, and protective equipment measures of control (Olishifski & Plog, 1988), and must be acknowledged and confronted. Administrative controls include employee transfers or modifications to work schedules, but these may simply disperse the exposures across more employees. Engineering and housekeeping controls are more likely to reduce or eliminate exposures for all employees by attending to exposures at source, but these are subject to budget and contractual arrangements if not power relations within management. Personal protective equipment will do nothing to eliminate or reduce hazards at source, but does create a barrier or restraint between individuals and hazards. Regardless of their method of control and effectiveness, the commonality among these measures would be decision-making by management to purchase equipment and materials, enforce contractual arrangements (e.g., housekeeping, property maintenance), regulate and maintain systems of the physical plant (e.g., HVAC system), or reassign work.

Most important for this sample, the psychosocial hazards must be addressed by the organization. This research visibly locates stressors for these CHNs within the organization and within the organization's environment. For example, unclear, fragmentary, and unsatisfactory clerical services are under internal management functions in the organization. Externally, the Health Unit Association of Alberta lobbies to promote the goals and objectives of the 27 health unit organizations. The identified stressors are more subject to organizational than individual control. In the next section, I present the suggestions that these employees made for organizationally based actions to reduce the hazards they perceived in their work environments.

Hazard Reduction Strategies

This section presents the results for the fourth research question: "What are the organizationally oriented strategies that informed community health nurses generate for reducing the hazards they perceive in their work environments?" Approximately one-half of all the ideas presented in the focus groups were directed toward the organization.[5] Although participants in every group made suggestions that might be implemented by the organizations, only two focus groups concentrated more on organizationally directed than on individually oriented strategies. In three health units, suggestions were predominantly directed to individual action, ranging between three-fifths and three-quarters of the total suggestions.

If strategy is defined as "the plan of action that describes resource allocation and activities for dealing with the environment" (Daft, 1989, p. 20), no focus group presented a strategy with its associated timelines and resource deployment. This was most likely precluded by the size of the focus groups, extent of the agenda, the group's lack of budgetary control, and the effect of power differentials within the focus groups. Strategy development might have been inhibited because I could not develop the theoretical concepts in time to inform the focus groups or because non-respondents, who did not undergo the learning process that occurred during the research, were included in the focus groups. Perhaps respondents' level of concern had a bearing on the way the group responded. When subjects were asked at the beginning of their interviews how concerned they were about their work hazards, 44% were concerned and 56% were not, according to my coding of their responses.[6,7] A more directive approach to moderating might have produced a clear strategy. Certainly field testing demonstrated that there was a need for at least a semi-directive approach with the focus groups in order to stimulate discussion. From another perspective, the response of the groups, which was more like brainstorming, may have reflected the style of group work among CHNs. If considered to be a mechanism for brainstorming which is "a group problem-solving technique that involves the spontaneous contribution of ideas from all members of the group" as stated in Webster's Ninth New Collegiate Dictionary (1987), the focus groups were indeed successful generators of ideas.

Subjects wanted occupational health and safety to be made a priority. They wanted employee assistance programs, joint health and safety committees, and hazard resource materials. They stressed the importance of improved communication channels and formal mechanisms for documenting concerns regarding work hazards. Many of their suggestions focussed on the provision or maintenance of equipment by the organization. For example, they wanted gloves in every clinic room, cellular phones for isolated travel, adjustable chairs for clinics and offices, lighter weigh scales, detailed rural maps, survival gear for vehicles, and well-serviced vehicles. Moreover, they considered it an organizational responsibility to provide adequate supplies (e.g., toilet paper, windshield scrapers) and to respond quickly to maintenance problems (e.g., plugged toilet, blocked air intakes).

Subjects suggested that inservice and orientation programs should address workplace hazards. They believed that hazards to health and safety should be included in orientation for new staff members. Their suggestions for inservice education included WHMIS training, defensive driving courses, self-defense courses, winter driving skills training, and the development of check lists to use when making appointments by telephone with clients (e.g., tie up dog). Further, they suggested that the organization clearly convey its position on safety to its employees.

Finally, CHNs suggested that activities also be directed toward the external environments of the health unit organizations. They suggested that professional organizations promote communication on work hazards among health units and the provincial government make its activity reporting system more efficient. They believed that policies for protecting the health and safety of CHNs should be standardized for all health units (e.g., HBV immunization, availability of gloves, restricted smoking). Last, they supported lobbying activities for the purpose of increasing the occupational health and safety content in nursing education curricula in the province.

In conclusion, the research to this point has identified the organizational context of CHNs' work hazards, and CHNs' ideas about organizationally oriented solutions, but what is clearly lacking is a conceptualization of the linkages between organizational factors and work hazards. Subjects provided the raw material in the interviews by discussing the organizational factors that were relevant to their work hazards. In the following chapter, constant comparative analysis of the interview data permits conceptualization of the data in terms of hazard prevention, recognition, and management at the organizational level.

Footnotes

1 The absence of research on biological, ergonomic, physical, reproductive, and safety hazards for CHNs in their work was discussed in Chapter Two.

2 Treatment versus prevention.

3 Except for the first of three questions answered anonymously on index cards in the focus groups.

4 According to the Federal-Provincial Advisory Committee on Environmental and Occupational Health (undated document, presumed 1985), a Canadian sample would require at least 558 subjects in an exposed group.

5 Since focus groups were not audiotaped, percentages can only be approximate.

6 Typical "not concerned" responses were: "I really feel that there's nothing that's too severe", "I wouldn't say it's something that consumes my every waking moment", "not very concerned", and "I'm not too worried." Typical "concerned" responses were: "I'm concerned", "probably at times I'm at risk", "very concerned at present", and "I try and do things to offset them."

7 The responses of the first health unit were coded "concerned" on the basis of their discussion of stressors and "not concerned" when subjects made a point of indicating their lack of concern. It was the experience with this first health unit that resulted in the inclusion of "How concerned are you about your work hazards" as a question in the interviews in the remaining four health units.

CHAPTER 7: ORGANIZATIONAL HAZARD SURVEILLANCE: RESULTS OF A CONSTANT COMPARATIVE ANALYSIS

This chapter provides an in-depth analysis of the linkages between organizational factors and CHNs' perceived work hazards. By now there should be little question that organizational factors underlie workplace hazards. In Chapter Two, a critical analysis of the disciplinary and theoretical pluralism in the occupational health field led to the incorporation of a sociological perspective, informed by organization theory, to study the existence of work hazards. Using that theoretical perspective, a critical assessment of the substantive research provided empirical evidence of the neglect of organizational factors in the limited research on CHNs' work hazards. Consequently, this research was conducted not only to identify the nature of the work hazards perceived by CHNs, but also to explore the associated organizational factors. In Chapters Four, Five, and Six the questionnaire data[1] on CHNs' perceived work hazards were presented and analyzed in light of the literature review. Those empirical findings only emphasized that organizational factors cannot be separated from work hazards. Using the interview data, I now conceptualize those linkages. This chapter takes the results for the second and third research questions beyond description and analysis to conceptualization of the factors in organizations and their environments that have a bearing on work hazards.

It is useful at this point to recall the discussion in Chapter Three of the early stages of theory development. I outlined how the empirical substance of the interview data was coded initially using subjects' words in order to stay close to the data and avoid imposing preconceptions on subjects' perceptions. Constant comparisons among interviews within and between health units revealed substantive similarities and differences in organizational patterns. By systematically comparing interviews, the underpinnings for more inferential coding categories were developed. That beginning level of abstraction, called interpretive coding (Miles & Huberman, 1984), included organizational terminology and resulted in 54 code words (see Appendix K). The conceptual work to that point is described as substantive coding by Glaser (1978) or open and axial coding by Strauss & Corbin (1990), coding being a synonym for analysis (Strauss & Corbin, 1990). The task of integrating those codes to form a grounded theory remained. This chapter describes the analytic process before focussing on the four major categories deriving from the codes and the overarching construct that unifies them, organizational hazard surveillance. One theme in particular runs throughout the four categories, the theme of power and dependency, and it requires a separate discussion. The chapter concludes with a discussion of the elements of a grounded theory of organizational hazard surveillance.

Theory Development

The grounded theorist carries out data management and data analysis (reductionistic and constructionistic activities) simultaneously, working towards the presentation of the data set as a conceptual whole representing reality (Knafl & Webster, 1988). On the one hand, the raw data are fractured into smaller, manageable units (code words) while on the other, the codes are used to extract meaning from the data and rebuild the data set as a conceptual whole (Glaser, 1978; Knafl & Webster, 1988). The systematic process that was used to develop the 54 code words (see Chapter Three) provided a solid foundation for the continuation of theory development. The process of reducing the data to codes and comparing across codes (and their properties) eventually leads to a holistic understanding of what is occurring in the data, going beyond description to theory development (Stern & Pyles, 1986). Moving back and forth between induction and deduction in this process leads to the formation of codes that are able to explain some aspect of the area under study. This represents one level of abstraction.

Creation of the 54 code words was the termination of substantive coding and the beginning of selective coding (Glaser, 1978; Strauss & Corbin, 1990). Selective coding is at a higher level of abstraction and leads to the formulation of coding categories. After the central phenomenon accounting for most of the variation in the organizational patterns had been identified, I proceeded with selective coding. First, by focussing on the code words that were organizationally oriented,[2] it became clear that the data set was describing the process of *organizational hazard surveillance*. Identification of this construct or basic social structural process (Glaser, 1978) was the critical juncture that permitted theory building to continue. Although the phenomenon under study may be explained by the term core variable (Stern & Pyles, 1986), concept or construct (Munhall, 1989), basic social structural process (BSSP) or core category (Glaser, 1978), a BSSP with its pervasiveness, variability, and change over time was appropriate for this data set and consistent with grounded theory terminology. Glaser (1978) defines basic social processes as having a minimum of two stages and focusses primarily on social *psychological* processes, perceiving social *structural* processes to facilitate the former. He acknowledges that the most relevant process for the study focus should be emphasized. Because organizational hazard surveillance is an evolving phenomenon in the five health units, it is only logical that a BSSP should be central to the discussion. Following discovery of the pivotal phenomenon, selective sampling of the literature (Glaser, 1978) was conducted for evidence of related concepts or constructs.

Concept of Hazard Surveillance

Hazard surveillance exists in the occupational health field as a concept guiding the work of occupational health specialists. In contrast to disease, injury, and accident surveillance which provide after-the-fact information about workplace perils, hazard surveillance has the potential to anticipate work-related injury or ill health (Wegman & Froines, 1985). Indeed, 'surveillance' implies the collection, analysis, and interpretation of data for the purposes of prevention as well as intervention (Hanrahan & Moll, 1989) or discovery as well as monitoring (Sundin, Pedersen, & Frazier, 1986). By identifying conditions, agents, and processes in the work environment, hazard surveillance (by occupational health practitioners) permits scrutiny of potential and actual hazardous exposures and mediates the development of focussed preventive strategies (Wegman & Froines, 1985). Hazard surveillance addresses the lacunae created by epidemiological methods which focus on workers' compensation claims, death certificates, disease registries, insurance or hospital records, and physician reports (Muldoon et al., 1987). By including the actual and potential exposures of the work environment, it facilitates opportune interventions for reducing exposures. By comparing across job categories in particular environments, it promotes identification of the most problematic exposures (Froines, Wegman, & Eisen, 1989).

Although no single approach to workplace surveillance captures the complexity of threats to health and safety, hazard surveillance fosters innovation in the prevention of injury and disease (Baker, Honchar, & Fine, 1989), and promotes priority-setting in accordance with established standards while contributing to decisions regarding the allocation of scarce resources (Wegman & Froines, 1985). By commencing with workplace exposures not outcomes (e.g., death, disease, or injury), hazard surveillance serves an important complementary function to disease surveillance (Froines, Dellenbaugh, & Wegman, 1986; Froines et al., 1989). The development of hazard profiles is the first step (Froines et al., 1986).

As a basis for preventive measures or more focussed analyses, a preliminary hazard analysis may well begin with employee questionnaires that encourage individual assessments of hazards or stressors (Mattila, 1985). Employee subjectivity is as important as more quantitative data sources (Reich & Goldman, 1984) and failure to quantify hazards is no indication that they do not exist (Griew, 1985). In fact, non-experts in the realm of occupational health and safety are more likely to assess risk in qualitative rather than quantitative terms (F. Baker, 1990). Employee subjectivity is a useful component of hazard surveillance

(Mattila, 1985; Nelkin & Brown, 1984; Reich & Goldman, 1984; Wegman & Froines, 1985), although Reich and Goldman (1984) and Robinson (1987) acknowledge the limitations (exaggeration, ignorance, and failure to perceive threats to health). Nelkin and Brown's (1984) discovery that workers tend to minimize the risks to their health and safety if they enjoy their work supports the limitations. Further, they report that professionals consider job satisfaction to be worth the risk. In any case, the foundation for workplace risk assessment is the identification of hazards (Froines et al., 1986; Yodaiken, 1984). By encouraging groups of workers to assess their own hazards, the opportunity is provided for identifying previously unknown risk factors, indicating the existence of known risk factors, and suggesting solutions (Reich & Goldman, 1984). The legitimacy of employee knowledge counterbalances the limitations of expert or scientific knowledge.

Notwithstanding the merits of the concept of hazard surveillance for detecting exposures opportunely and seeking employee perceptions, the concept as presented in the literature has its shortcomings. It concentrates on hazards in the physical work environment (Elling, 1989; Froines et al., 1989; Mattila, 1985; Sundin, Pedersen, & Frazier, 1986; Wegman & Froines, 1985), ignores psychosocial hazards for workers (Gardell, 1982), and fails to consider relevant organizational factors.

Construct of Organizational Hazard Surveillance

This research elevates hazard surveillance to the level of a construct that captures structural and contextual dimensions of organizations in a previously unexplored context. A construct consists of several concepts and is more encompassing, more abstract than one single concept (Field & Morse, 1985). As a construct, organizational hazard surveillance is shown by the process of selective coding to encompass four major categories of data that have not been developed in the occupational health literature. Each one of the four categories crystallized from the review of the code words after the construct of organizational hazard surveillance had been identified. Clustering of the code words into more abstract categories occurred more readily when the umbrella term was known. The categories each open different windows on the variation reported across the five health units. By integrating relevant literature into the discussion of the categories, the theoretical sensitivity (Glaser, 1978) of the analysis is further enhanced. Following a brief overview of the categories, I discuss each one separately.

The four categories reflect structural and contextual dimensions of the health units, including dimensions that might have been overlooked without the guidance of systems theory and contingency theory. The first category, *conditions for collegiality*, recognizes the structural dimensions of spatial complexity and gender configuration which have implications for physical proximity and gender equality in the organizations. Although the original research on structural dimensions does not address gender in personnel configuration (e.g., Pheysey, Payne, & Pugh, 1971; Pugh, Hickson, Hinings, & Turner, 1968), and conservative texts (e.g., Daft, 1989) focus on gender-neutral personnel ratios, the present research underlines the relevance of gender configuration for organizational hazard surveillance. The feminist analysis prompted by this category draws upon the feminist critique of organization theory and its neglect of gender in work organizations. A second category, *structures for surveillance*, brings to the forefront the structural dimensions of formalization and standardization. *Control over physical plant*, the third category, captures the effects of a contextual dimension, the organization's environment. Ownership of property, control over contractual arrangements, and resource acquisition are discussed. The fourth, *hazard information transfer*, underscores the structural dimension created by the hierarchy of authority and refers to general (non-specific) mechanisms for the transmission of hazard information. Notwithstanding the variation found across health units, the similarities and differences are encompassed by these four categories deriving from the interview data. No health unit was consistently in a favourable position with respect to organizational hazard surveillance. Each unit had its strengths and weaknesses. However, one unit in particular led the way.

Conditions for Collegiality

Collective efforts are required when biological, ergonomic, physical, psychosocial, and safety hazards are identified in the workplace. In Chapters Four and Five the association between organizations and perceived hazards became apparent. The discussion in Chapter Six highlighted the interdependencies among subunits, organizations, and the external environment. For example, the availability of safe, well-maintained vehicles, maintenance of the HVAC system, clarification of clerical responsibilities, and funding to hire prenatal instructors all represented interdependencies. Analysis of the interview data indicates that physical proximity and gender equality influence those interdependencies and create an environment for collegial interchange that facilitates or hinders hazard identification and reduction. An environment conducive to discussion is important for the exchange of concerns and information about work hazards under conditions of respect and equality. Pierce and Page (1986) draw upon the work of Carol Gilligan, Scott Peck, and others to develop a concept of colleagueship that encompasses mutuality and empowerment. Colleagueship represents fairness among individuals, but not necessarily equality. The notion of an environment for collegiality sustains a liberal feminist perspective (as opposed to a radical feminist or socialist feminist approach [Saunders, 1982]) and reflects the variations in physical proximity and gender equality that have relevance for the surveillance of work hazards in these five organizations.

Physical Proximity

By increasing physical proximity, the individuals or subunits that have the influence to make changes are brought closer to the perceived hazard, which might be expected to facilitate their evaluation of the hazard. For example, reducing the distance between individuals exposed to a hazard in the physical work environment and the individuals in positions of authority over maintenance and cleaning services might enhance stewardship of physical resources.

Spatial complexity creates stressors and hinders hazard resolution. Although health unit personnel may be located in one building, administrative and professional subunits, and subunits of subunits, may be dispersed over different floors of the building. Even though the seat of authority for a health unit may be in one geographical location, personnel may be located in two buildings with professional and administrative subunits distributed across the two locations. It made it difficult to network, according to a Health Unit (HU) 2 CHN, when "on the dead run delivering something" and for an HU3 CHN, "It's harder to pick up the phone and talk to somebody about a, a work stressor. It would have to definitely be in writing." The health units' mandate to service geographically dispersed populations necessitated suboffices (regional, district, or outlying offices). A manager in HU4 admitted, "it would be easier if we were all under one roof but that's not practical in terms of distance that they [CHNs] would have to travel." It became clear that health unit personnel were dispersed within and between not only buildings, but also geographical areas and political jurisdictions. What then were the implications for work hazard reduction? One suboffice CHN expressed it this way:

> Quite often you get information secondhand . . . . An issue comes up. They [main office] hash it out. They talk about it. They resolve it. They come up with a conclusion and then you hear about it. Well, who are you? Don't you count, you know? . . . . Sometimes, you do get input, but you're wondering if you are making the impact that you would.

In HU3 a CHN commented that being in a suboffice is a disadvantage for communication with administration. "With head office, we're not as visible . . . . Oftentimes our concerns and issues are minimized because we're not visible . . . . Senior management isn't seeing them themselves every day." Another HU3 suboffice CHN commented, "I don't think that they have . . . realized some of the physical hazards that we deal with.

You know, with the driving conditions, the road conditions." One CHN described what suboffices in HU3 have had to do:

> We wrote letters to our administration department, our . . . administrator for the health unit . . . . He's the man who pays the bills, who signs the contracts with the various agencies, pays the rent on the building, gets all the maintenance stuff, gets the windows fixed when they are broken . . . , but which again takes months and months and months and months of phoning [location of] head office, writing letters, begging, borrowing and stealing and nagging to get basic building, building care done.

By contrast, monthly meetings arranged by and with a managerial CHN in HU4 and HU2 on-site at suboffices provided CHNs with opportunities for discussing concerns.

In HU2, subjects described "division and stress" because of having more than one main office. One subject suggested that having a single main building would allow a mid-manager to "talk to someone that's a mid-manager as well." In contrast, a CHN in the health unit with a consolidated main office stated, "it gives us a better perspective of the health unit functioning as a whole . . . even though we're individual programs . . . it's nice to be here to be more aware of what's going on in the other programs . . . . Suboffices don't have that as much."

Subjects in HU4 suboffices observed, "In our office because we're a smaller office, we do share a lot." For HU5, the dispersion of personnel highlighted the importance of the coffee room. "This health unit was at one time all in one building by itself and they all coffeed together," explained one CHN. Another related, "and then something as simple as taking our coffee room away from us, you know, because we were too clicky, you see, the administration felt we were too clicky, the nurses, so away went our coffee room."

If one important structural element of the health units must be specified, it is the coffee room where social and professional interchange may occur. A coffee room provides opportunities for collegial interaction between employees in different subunits and contributes to collegial discussions within subunits. Subjects in HU4 commented: "At coffee . . . if there's a work stressor . . . . people are usually fairly vocal" and "I think here we do talk [about hazards]. Like I know I've heard conversations, say around the coffee table."

For HU3 CHNs in at least one site, "we have coffee with the people [Environmental Health] every day"; "we get along really well and our coffee room, everything is divulged in there"; and "we work physically in the same building [with Home Care]. We have coffee together." In the HU3 main offices the situation changed. "We don't even hardly know those people over there . . . . We're in and out all the time but you don't know them [Home Care, Speech, Nutrition] like you do when you have coffee with them" and "because basically 75%-90% of the staff in this place is female, they [Environmental Health] . . . never coffee with us." For HU1 and HU2, the on-site coffee room is for discussing or reducing stressors. In HU5, CHNs and secretaries simply found an alternative location for coffeeing together, a nearby cafeteria. What is management indicating to employees who must find an off-site location for interaction? Does that also distance management from employees?

Gephart's work (1987, 1989) supports my notion of physical proximity versus distance by identifying the disjuncture between management which makes decisions in a safe or privileged location and workers who are exposed to safety risks. He clearly identifies distance (from the hazardous work site) as a factor, noting the rarity of management's presence at a potentially risky work site. It is the worker who has the intimate contact with hazardous exposures and who is the first to experience the effects of changes in the labour process (Walters, 1985), yet because of spatial and vertical complexity of the organization, that experience might not be readily shared. Not only does spatial complexity from the dispersion of employees across geographical locations enhance or diminish physical proximity, but also vertical complexity (levels in the hierarchy of authority) reduces physical proximity. In some health units, there are two levels of management within the CHN subunit. This aggravates the difficulties encountered with dispersion of personnel in suboffices across the jurisdiction of the health units and is discussed under Hazard Information Transfer.

Gender Equality

In addition to physical proximity, organizational conditions for collegiality require gender equality. Just as the spatial complexity of organizations has implications for employees' physical proximity, the structural dimension of gender configuration has relevance for gender equality. The term configuration captures both the numbers and positions of men and women in these organizations. Kanter (1975) pointed out the need to examine the patterned relationships between men and women in organizations, citing the paucity of management research on gender and calling for a structuralist perspective. Men and Women of the Corporation (Kanter, 1977) followed. Although its focus was equal employment opportunities, not access to organizational hazard surveillance, Kanter's research brought to light the relevance of structures of power, opportunity, and numbers for women in the workplace. It will be seen below that those very structures are relevant to the focus of this present research. Kanter argued that problems of gender equality cannot be solved "without structures that potentially benefit all organization members more broadly" (p. 266). This first category (and the three to follow) reflects that argument.

The health units in the sample ranged from almost totally female organizations to organizations with male management and male subunit employees (e.g., Environmental Health, Finance), but organizations where subjects estimated that still 75%-90% of the employees were female. Although there were female as well as male chairpersons of the highest authority, the Boards of Health, there were few females on the Boards. Because the assignment of men and women to positions in health unit organizations was not consistent across the sample, male domination and female subordination could not be taken for granted. For example, there were extremely few men in the employ of one unit and no managerial positions among them, and in another, the size of the CHN subunit appeared to take precedence over any gender effect in the other unit and the responsibilities of the male medical officer of health were shared (to an undetermined extent) with a female administrative assistant. In others, there was an all female management or predominantly male management. In short, the sexual division of labour across the five units varied between traditional and nontraditional.

Variations in gender relations became apparent as CHNs described avenues for identifying and evaluating perceived work hazards or reported differences among subunits' control over hazards. Individual interviews shed light on the limited access to resources for investigating perceived work hazards and the milieux for voicing concerns.

To contextualize the gender relations discussed below, CHNs' limited access to specialized occupational health resources is described first. Subjects occasionally reported consulting with occupational health specialists in the government regarding employee exposures, but only with respect to some inadequacy of the heating, ventilation, and air conditioning (HVAC) system. For example, subjects commented, "When we were concerned about the air quality, we . . . went the route through the organization and that didn't work so then people personally phoned [the government]" and "I'm not sure where they phoned - occupational health. Anyway, a fellow came down and did some monitoring, but he said his standards are set for industry so our building passed." Subjects also acknowledged opportunities to bring forward health and safety concerns to their collective bargaining unit or to their negotiating committee (liaison committee). However, occupational health and safety concerns and the importance of documentation had only been discussed in union meetings and at the negotiating table, and were not covered by collective agreements. "We fill in incident reports," explained one CHN, who stated that the reports go to the personnel officer. Without a background for analysis of the reports, it might be expected that a person in that position would do little follow-up. In non-unionized units, only non-binding routes for collective action were available for dealing with concerns regarding work hazards. In HU1, for example, "the negotiating committee's made up of people from the different departments and if you had concerns, they would collectively go to the Board." In HU2, a subject stated, "Because it's a female profession I really don't think they [the Board] listen." To illustrate, a letter written collectively regarding psychosocial hazards was destroyed by the chairperson and not transmitted to the Board. "He tore it up in front of the director and said 'this is not my problem'."

With little access to occupational health resources, CHNs turned to related professionals. When hazards are suspected, one HU3 CHN explained, "going through Nursing wouldn't do any good because Nursing directs you to [manager of Environmental Health]." Indeed, a subject in HU1 remarked, "I would probably talk with the Environmental Health people in the organization . . . . to verify whether this is really a concern. I wouldn't necessarily stop there if I really felt it was a concern." Regarding Environmental Health, an HU3 CHN explained:

> They have access . . . to some of the equipment that could be used to test . . . for some things . . . . They probably have access to the . . . best resource to go to as far as some of the environmental and occupational type things . . . . I don't know if I should [say] [laughs] . . They are mostly men also. [laughs] I thought I'd put that in. I feel that has something to do with it but not, not an awful lot.

Not all subjects reported cooperation from the Environmental Health Program. Subjects in HU3 stated: "We do use Environmental Health, but she's female too and she listens"; "public health inspectors are traditionally very closed mouth . . . . they don't give us too much information"; and "with the help of the [female] health inspector we did manage to get the old caretaker's contract not renewed." According to another,

> We found that some of the public health inspectors, they aren't that will[ing] to cooperate with Nursing because they feel that's not their problem therefore they just do their job . . . . you know, this kind of attitude . . . . the public health inspectors are male-dominated, but they now have a lot of female public health inspectors working and we find that they are much more communicative than the men.

For HU5 CHNs, "That's viewed as a different department that's above the nurses and when we take a concern to them, it's treated . . . like we're being silly." For an HU3 CHN, the Environmental Health division was the most appropriate resource and she explained:

> If you check with the health inspector she can get all the facts straight and then she can approach it from that point of view rather than a community health nurse trying to get on to an environmental health issue. Really it's a, the health inspector's ball park. It's not really a community health nurse ball park issue I think.

"Because they're men". In addition to describing the health inspectors' responses to CHN concerns, subjects also portrayed an organizational subunit that has more control over its work hazards than that experienced by CHNs, because of gender. In HU2 and HU3, subjects' comments included: "They are all male except for one. And, well I think they have more ear to the top [access to management]"; "I think the men have a little more . . . leeway maybe or say in some things"; and "because it's more a male-dominated profession, they seem to be able to stand their ground." One CHN stated, "they certainly had a lot more influence on . . . the MOH [Medical Officer of Health] than we ever have . . . because they're men, because they click together as men." Another subject related, "If they were all upstairs and suffered the heat and the cold, it would have been fixed a long time ago, because they're men." A colleague stated, "They also have the ear of the MOH more than we do [whispers] because they're men [laughs] . . . . They're persistent . . . . We're second-rate." Regarding a safety hazard perceived by HU3 CHNs, one commented, "Really, really serious problem but the men don't think of it that way. They don't see it as a problem."

In HU5, with respect to perceived work hazards of CHNs, subjects commented: "There's a real wall between the two [Environmental Health and Community Health] and it's not just male/female. It seems to be profession/profession", "the old boy network has been very detrimental to this health unit", and "there's lack of communication and there is a, a very strong . . . sense that 'those women are bitching again'." A colleague described feeling at times that "we just don't get any respect as a nurse," and another stated, "sometimes we do feel like you know, they just think we're a bunch of . . . cackling old hens." Another HU5 subject further describes the milieu for expressing concerns about work hazards:

> They don't really care what we have to say anyway so why bother saying it? You know, it was, it's sort of been an attitude. 'If you don't like it, there's the door'. . . . If . . . you keep going up . . . with concerns . . . . you're getting this, 'Oh, those . . . they're just - you-know-what disturbers' [laughs].

A colleague contributed, "She [CHN] asked Environmental Health [about a chemical] and they poo-pooed her and said 'Oh, you know, this is stupid. They've been using it for years. Why are you worried?'"

Contrasting with HU5 are the comments of HU4 CHNs: "it's a bonus [laughs] that our entire organization is female . . . . I think the women work better together than they would if there was a male overseer"; "the lady we have as CEO, she could run circles around anybody"; and "if our Board ever changes, especially our Board chairman, we don't know what we'll get. She's excellent." Additional comments include: "we're all treated equally even though some programs are bigger than others so the idea is that we're all part of a team here and nobody is, got any more status than anybody else", and "it's definitely a female-dominated . . . place of employment . . . . in some ways I think that there's more freedom because there is no male dominance whatsoever . . . . I've never seen it as a stressor not having men here."

Also contrasting with HU5, subjects in HU1 commented: "Generally I would say the group is listened to and respected"; "as you go up from management up [sic] are open to and receptive to what the Community Health nurse, for instance, has to say about our issues that we've [subject and interviewer] discussed"; and "we have had a pretty understanding Board." Other HU1 CHNs reported: "We have such a very approachable administration and Board that it's hard to imagine that they wouldn't try to understand"; "if you don't feel comfortable doing something, you certainly can say so and I think that that would be respected"; and "management in our area, . . . in Community Health, has done a lot to assist in the changes for the better in the hazards control."

Although a few subjects focussed on a professional rather than a gender basis for relations between subunits, the evidence in this small sample challenged that position. In the predominantly female organization there was not one expression of concern regarding collaboration over work hazards between CHNs and females in professions that are traditionally male-dominated [e.g., Dental Health, Environmental Health, Medicine] and in organizations where both genders were represented in a profession, subjects described positive relations with the female constituents. A perspective that examines gender inequalities appears more likely to increase our understanding of the dynamics within these organizations than does a perspective based on professionalism.

A Feminist Perspective

This female-centred research requires a feminist analysis not only because all subjects were female and members of a female-dominated profession in a predominantly female organization, but also because the issue of gender surfaced in subjects' descriptions of hazard surveillance. Does the fact that women are occupationally segregated have a bearing on the surveillance of hazards to their health and safety?

The feminist literature examines occupational segregation by sex, wage inequalities, barriers to women's occupational mobility, the double burden of women's work in domestic and public spheres, and exclusionary practices[3] for female workers (Aitkenhead & Liff, 1991; Armstrong, 1987; Armstrong & Armstrong, 1988; Beechey, 1987; Blau & Winkler, 1989; Butter, Carpenter, Kay, & Simmons, 1987; Daniels, 1975; Epstein, 1988; Garnsey, 1982; Hartmann, 1982; Kanter, 1977; Kaufman, 1989; Lowe, 1987, 1989; Lyon, 1986; Mackie, 1991; Renzetti & Curran, 1989; Reskin & Hartmann, 1991; Richmond-Abbott, 1983; Walby, 1990). Kanter (1977), for example, demonstrates that the numerical distribution of women and men in the organization affects their interaction, favoring those who enjoy numerical dominance, the men. Women's "rarity and scarcity" (p. 207) therefore negatively influence their working environment. The feminist literature appears less likely to address hazard surveillance for working women or the processes by which vulnerable female worker populations are identified. It is more likely to deal with corporate exclusionary practices around reproductive health and occupational mobility (Bramwell & Davidson, 1991; Scott, 1984) or sexual harassment as a manifestation of women's economic dependence (Crull, 1984; Stockdale, 1991).

A selected review of the literature confirms Chavkin's (1984) observation that convergence is lacking between the women's health movement and the movement for health and safety in the workplace. While addressing the stressors of household and public work, feminist literature provides little guidance for examining factors underlying a healthful environment for women's work in the public sphere. For example, Reskin and Hartmann (1991) consider occupational segregation to be but one manifestation of unequal opportunities for women in paid work along with wages, benefits, and sexual harassment as other manifestations. They do not address unequal opportunities with respect to surveillance of hazards to women's health in the workplace. Although occupational stressors for women have been scrutinized (e.g., Lowe, 1989), organizational level responses to those stressors do not appear to have been subjected to a feminist critique. Feminists have focussed on gender inequality in the workplace as a result of limited access to wages, benefits, occupational mobility, and occupational choice, but not as a result of limited access to hazard surveillance for the protection of health. While a feminist analysis is indicated, limited direction for the focal point of this research is available in the literature.

Taking a liberal feminist perspective which looks at women's equal access to opportunities (Saunders, 1982) or the expansion of women's options (S.J. Wilson, 1991), and focussing on the ideology of patriarchy that is associated with gender inequalities, I use as a reference point CHNs' unequal access to knowledge, material resources, skills, and equipment. With this perspective, the importance of conditions for collegiality becomes clear. Saunders (1982) describes patriarchy as "a hierarchical system of power in which males possess greater economic and social privilege than females" (p. 253). Arguing that the concept of patriarchy is "indispensable for an analysis of gender inequality" (Walby, 1991, p. 1), Walby defines patriarchy as "a system of social structures and practices in which men dominate, oppress and exploit women" (p. 20) and rejects both the universality of patriarchy and the ideology of biological determinism. Walby's notion of social structures and practices is particularly useful for analyzing the variations in this sample and opens up for scrutiny the privilege of males in non-hierarchical organizational positions with respect to CHNs. Walby recognizes six "relatively autonomous" (p. 20) patriarchal structures, including patriarchal relations in paid work, but like many feminists ignores women's health and safety at work. Certainly, women-centred research documents workplace hazards or stressors, but it fails to examine the paradigms that have a bearing on surveillance of the hazards.

What evidence of patriarchal ideology emerges in this category? To place subjects' perceptions in context, the majority of subjects lacked a specific educational background for assessing or confronting their work hazards. First, only three out of 57 CHNs (5%) had certification in occupational health nursing and just 16 reported participation in some form of continuing education in occupational health (see Table 3 in Chapter Three), so most had to seek information and resources. Second, when responses were coded for the focus group question "What is the most useful thing you have learned from this?", 60% of the responses referred to an increased awareness. Examples of the responses that were coded as 'increased awareness', one from each health unit, are: "I have become more aware of the variety of stressors/hazards associated with my job"; "issues that I had not given much thought to suddenly gain greater importance"; "it makes you take notice of possible or actual hazards and to take precautions"; "bring[s] to my attention some hazards which I had not identified but which are present in my work environment"; and "made me much more aware of the hazards out there."

By virtue of the mandate to conduct environmental inspections and investigations under the Public Health Act (1984), public health inspectors were an obvious resource to CHNs. For example, they were familiar with relevant legislation, including WHMIS. There was the first conjuncture with patriarchal attitudes as male co-workers in non-hierarchical positions devalued or discounted CHN requests or concerns, effectively creating obstacles for hazard surveillance. To reiterate earlier quotations, "they don't give us too much information" and "they aren't that willing to cooperate."

The second conjuncture was located within the hierarchy of authority when CHNs attempted to deal with actual or potential hazards such as the condition of health unit vehicles, availability of surgical gloves or HBV vaccine, purchase of cellular phones for isolated home visiting in rural areas, assessment of the HVAC system, and security in isolated buildings. By de-emphasizing their concerns, controlling economic resources, and determining communication networks, males in one or more level of management (e.g., professional management, administration, chair of the Board of Health, membership on the Board) contributed to the denial of access to strategies for the prevention or intervention in CHNs' perceived hazards at work. At the same time, the "old boys' network" or male-male interaction was perceived by subjects to facilitate male co-workers' confrontation of work hazards (e.g. workload).

The words of women themselves in the sample attested to the perpetration by men of stereotypical female images in CHNs' workplaces [italics added]. "When we take a concern to them, it's treated . . . like we're *being silly*"; "we're *second-rate*"; "we just don't get any respect"; "those women are *bitching* again"; "if you don't like it, there's the door"; "they just think we're a bunch of . . . *cackling old hens*"; "they felt that . . . we were *being emotional* and . . . *worried too much*"; and "this is *stupid*." The use of affective terminology not only resonates with stereotyping, but also serves as a reinforcement or counterfoil for the masculine ethic (norm) of rationality (Kanter, 1977). Further, it demonstrates how "the personal is political" (Wineman, 1984, p. 5). According to Wineman, the realization that relations of power exist in one-on-one interactions in small institutions, as in large-scale organizations, is a major realization of the feminist movement. Wineman describes a "webbing of oppressions" (p. 170) that effectively obstructs women's empowerment because of its mutual reinforcement. To continue the comments, "this underlying current . . . that the nurses seem to be *in the wrong* all the time"; "it's [HBV] not a risk and *'don't worry about it'*"; "I was really made to feel I was *being stupid*, and . . . that this was *really dumb*"; "they didn't want to supply them [gloves]. They felt . . . we were *being emotional*"; "we should be taken seriously and not made to feel we're *being over-emotional* or *stupid*"; and "you females are *always bitching* about something." Whether explicit or implicit, the language reinforced male superiority by implication and trivialized CHNs' concerns.

The men responsible for the above reactions were essentially applying a 'gender' not 'job' analytical model to the situation (Feldberg & Glenn, 1979; Northcott & Lowe, 1987) and avoiding recognition or acknowledgement of the working conditions that framed CHNs' perceptions. Feldberg and Glenn demonstrate that sex-segregated models of analysis for the workplace effectively devalue job-related perceptions of female workers and attribute their perceptions to personal characteristics instead. By de-emphasizing conditions of employment and focussing on individual factors, the 'gender' model precludes collective efforts to address structural conditions in either the physical or psychosocial work environments. The male actors in this situation enjoyed power as a result of the social relations that they generated. For Emerson (1962, p. 32), "power resides implicitly in the other's dependency" and the dependent position of actors varies according to the alternative avenues of goal achievement that are available.

Certainly, subjects in one or more offices in three of the health units described patronizing and inequitable gender relations for confronting hazards in the workplace. Yet in two health units, CHNs provided no evidence of de-legitimizing attitudes nor of perceived inequities based on gender in their attempts to deal with hazards. In fact, subjects' comments were a sharp contrast to the described patronizing attitudes. To illustrate with two brief quotations from an earlier section, "They aren't undermining you" and "people here are very open to concerns and questions and always finding solutions or getting back to you." One of those health units had male management, the second had female management. By shifting from a feminist perspective to an organizational subunit perspective with its focus on structural conditions for power, further insights are gained. These are discussed later under Power and Dependency.

In sum, physical proximity and gender equality among employees and management reflect two structural dimensions of organizations (spatial complexity and gender configuration) that affect organizational hazard surveillance by their contribution to or detraction from collegiality. By promoting collegiality, the health units provide a mechanism for employees to raise, share, and resolve concerns regarding hazards in the workplace. By failing to enhance collegiality, they are more likely to maintain the status quo.

Structures for Surveillance

Despite CHNs' belief that they had a right to a safe and healthy work environment, formalization and standardization for hazard surveillance varied across the five health units. Under the Alberta Occupational Health and Safety Act (1980), an office or administrative site with 51 to 199 employees on-site in one work period (shift) requires only one currently qualified first aider or equivalent at the work site. No provision is made under the regulations for the recognition, evaluation, or control of hazards in an office site nor is the type of service provided taken into consideration. How then did public employees working out of an office building for a human service organization acquire assistance to assess the hazards of their occupation and of their organizational environment?

No health unit provided comprehensive occupational health services for its CHN employees either by salaried or contractual arrangements. When asked about their access to occupational health services, subjects had varied responses. "We ourselves are our own occupational health"; "I don't even know if there's a health and safety committee"; "I'm not too sure. It's not something that has come up a lot"; "none"; "I have no idea. I'd have to look it up in the phone book"; "I don't know [laughs]"; "I suppose they're only a phone call away"; "we don't have any"; "like we don't even have a health and safety committee"; "I guess I've never really thought of it [laughs]"; "I think it's left up to the individual in this organization. To deal with it as best you can"; "I don't know even who to look for"; "I wouldn't know that. I don't know if there are any occupational health services"; and "oh, good question.

I have no idea." Their comments provided no sense of direction with respect to occupational health services.

Wuorinen (1984) advocates joint occupational health and safety committees (JOHSCs) as effective mechanisms for preventing accidents and disease. Indeed, under Alberta legislation, JOHSCs are to meet not less than once every month for the purpose of identifying unhealthy and unsafe conditions at the work site. Consisting of no less than one employer member and two worker members, JOHSCs are established under the Act at designated work sites by order of the Minister responsible for the Act. Health units, however, were not among the designated work sites. Moreover, neither of the two unionized health units had a JOHSC included in the contract with the CHNs and the majority of the health units in the sample did not have any type of JOHSC. According to one subject, "it's impossible to effect changes because we don't have a spokesperson for work hazards or stressors per se." It is the commitment of employers and employees to safety and health in the workplace that is important (Boden, Hall, Levenstein, & Punnett, 1984; Sass, 1985, 1986, 1989). The words of an HU3 CHN captured the situation. "It's been on the [negotiation] tables for years. It's been something that hasn't been settled . . . . You give in on something else and you don't get that."

While 53% of all subjects reported that there was no JOHSC and 9% did not know, 39% indicated that a committee structure existed for dealing with health or safety, but not necessarily both. The majority of the 39% did not know how often the committees met, but nine subjects indicated the frequency to be every three *or more* months. Although there was a non-negotiated JOHSC in HU3, a CHN reported:

> It's an in-house committee. It's not terribly well structured . . . It has a questionable mandate . . . . In fact, I'm not sure that any of us are really quite that certain of what it is supposed to do. They don't seem to have much power. That's for sure . . . . We do not in the health unit have it as part of our contract.

Another subject stated, "Not an awful lot even gets brought up in that committee because, I think, sometimes we feel that it's probably not going to go anywhere anyway" and "I don't feel that we get enough . . . feedback." By contrast, one HU3 CHN remarked, "When we've had minor problems with the building that we feel aren't safe, that's who we've reported it to."

In HU1, a staff health committee was created by management. A CHN explained, "We thought updating staff immunization would be a good way to start. And we've just started." Consistent with an individualistic orientation, it began by focussing on individuals' responsibility for maintaining immunization levels. Although management took under consideration the occupational health background of staff when forming the committee, the influence of the dominant lifestyle paradigm only perpetuated an individual orientation.

Other avenues to hazard surveillance put forth by subjects were the collective bargaining unit under Alberta legislation and the committees formed for bargaining purposes by managements, albeit limited by their organizational mandate. One HU2 CHN remarked, "I guess, you know, physical problems in the workplace could be dealt with through them." Another clarified, "We can take concerns that affect the entire health unit to that Board [through the committee]", suggesting that without consensus among subunits, a work hazard would not be communicated through the committee that management organizes.

One structural dimension was consistent for all five health units: formalization of workers' compensation. Classified as low risk industries, the health units were insured against employee work-related injury and disease under the Workers' Compensation Act. Low fee assessment rates corresponded to their low risk classification under the regulations. The low risk classification reflected WCB-legitimated effects (see Footnote 4 in Chapter Two), and reporting levels, not potential causes. After-the-fact disease and injury surveillance contributes to prevention only after adverse effects have been recognized officially (Walters, 1985). Sundin et al. (1986) remark on the potential for discovery when cause (hazard) and effect (disease) surveillance systems are integrated, but they fail to acknowledge the long latency periods for disease and the failure of insurance schemes to recognize all work-related health effects.

In contrast to workers' compensation, another approach to health and safety was not formalized in every health unit. A personnel practice that has relevance for this discussion is the establishment of an employee assistance program (EAP). Under ideal conditions, EAPs are confidential, externally provided services designed to assist employees with personal problems that are adversely affecting their work performance, health, and ultimately organizational goals (Blum, 1990). While EAPs have an individualized focus and are generally reactive in design, proactive designs may include the use of informative seminars, management development, and consultation (Nahrwold, 1987). Experience in the private sector prompted a CHN in HU2 to comment:

> I really realized when I was out there [in the private sector] how many of the things they do out there for employees that we don't have here and we're a health unit. Like we don't have any Employee Assistance Program at all and like that is a real, I think, problem.

In this sample, one health unit made an EAP available through a referral agency, another unit had an EAP under development, and a third health unit received approval in principle from its Board of Health late in 1991 to develop a proposal for an employee wellness program underwritten by a consortium of health care organizations. The first time that the idea was presented to the Board it had been rejected, but it was approved at the second presentation.

Not one subject in the health unit with an established EAP critically analyzed the individualistic focus of EAPs. Although that could reflect an ideology that focusses on the responsibility of the individual for health and safety, it could also indicate the success of a proactive EAP design that promotes team-building and understanding of different personality styles. Comments seemed to emphasize the former rather than the latter, however. For example, one CHN related:

> With the Employee Assistance Program we have lots of support for taking care of ourselves in terms of . . . the emotional kinds of things . . . We've dealt with parenting . . . and issues that are important to us as parents . . . and people.

According to the Annual Report, the program's purpose was to assist employees to maintain a satisfactory work performance and to deal with behavioural health problems. Another subject in the same health unit remarked, "It's not that cheap . . . it says a lot about management that they believe [in EAPs], and the philosophy basically is that . . .

personal problems interfere with your work." "Staff morale is very important and I think the EAP . . . also demonstrates, I think, that management cares about their staff," commented another.

An EAP may deflect attention from a workplace etiology and is not appropriate when persistent work overload, unsafe environments, and organizational structure are the root problems (Blum, 1990; von Hauff, 1991). According to Green (1988), EAPs should be recognized as *supplementary* to healthy work environments and work processes. Yet in this sample, the trend appeared to be the formalization of EAPs, not JOHSCs. Such a trend could be expected to maintain an individualistic focus, minimizing intervention in and prevention of hazards.

It became apparent in Chapter Six that work hazards are constituted as a result of both the nature of the occupation and the nature of the organization. To illustrate, the task of immunization is inherent to the occupation, while the task of immunizing a geographically dispersed population is inherent to the organization. As well, the occupation of community health nurse encompasses cradle-to-grave health promotion and preventive services for a heterogeneous population (Alberta Community Health Nurses Society, 1988; Canadian Public Health Association, 1990; Doucette, 1989; Feagin & Alford, 1990; Underwood, Woodcox, Van Berkel, Black, & Ploeg, 1991), but health unit organizations employ CHNs to provide those services to a political jurisdiction under economic constraints (Alberta Health, 1991a; Harper & Smith, 1979; Schartner, 1982).

Although the distinction between occupation and organization brings to the forefront again the issue of individual versus organizational responsibilities, it cannot absolve organizations of their responsibilities with respect to the hazards of employees' occupation. In Chapter Two it was acknowledged that individual employee characteristics play a role in workplace hazardous exposures (Pennings & Goodman, 1977; Van de Ven & Ferry, 1980; Winett, King, & Altman, 1989). Indeed, the provincial Occupational Health and Safety Act (1980) stipulates employer and worker obligations.[4] It was argued in Chapter Two, however, that a paucity of literature addresses the organizational factors associated with occupational work hazards. The mandate of health units requires that they employ CHNs in order to fulfill their obligations to the public. In Chapter Six, the analysis of the hazards in the physical and psychosocial work environments of CHNs only underscored the importance of an organizational focus. Under the Occupational Health and Safety Act (1980), it is the responsibility of the employer to:

> ensure, as far as it is reasonably practicable for him [_sic_] to do so, (a) the health and safety of (i) workers engaged in the work of that employer, and (ii) those workers not engaged in the work of that employer but present at the work site at which that work is being carried out, and (b) that the workers engaged in the work of that employer are aware of their responsibilities and duties under this Act and the regulations (p. 4).

Yet only two health units orientated their CHN employees to WHMIS legislation. Furthermore, less than half of the CHNs had access to a specific collective mechanism for raising concerns about hazards (e.g., JOHSC), less than half had access to union resources on occupational health and safety, and less than half had access to an individualized intervention program (e.g., EAP).

Just as formalization for meeting employer responsibility varied across health units, so also did standardization of procedures (see Table 7 in Chapter Four). Preventive routinization reduces uncertainty (Hickson, Hinings, Lee, Schneck, & Pennings, 1971) and uncertainty is "a lack of information about future events so that alternatives and their outcomes are unpredictable" (Hinings, Hickson, Pennings, & Schneck, 1974, p. 27). Focussing on the uncertainty of work hazards and exposures, standardization was seen to vary among the health units. In all 5 health units there were some written safety policies and procedures. For example, an HU3 CHN reported, "It's our policy that we drive with our lights on", but an HU5 subject stated, "one concern is that we don't have a lot of written policies and procedures" and "there's [sic] many things in this health unit that are done on . . . unwritten policy." It was only after an accident that HU5 CHNs were told, "You don't have to [travel]. If you don't feel your road is safe, you come back." In HU2 there were conflicting perceptions. On the one hand, "No matter what the weather, you're expected to come to work." On the other hand, "if the roads look bad, I cancel." An alarm system existed in HU2, but had been requested in HU3 and HU5 without success. Preventive maintenance schedules for vehicles varied across organizations from providing maintained vehicles, to providing maintenance instructions to employees, to providing a car allowance. In brief, the practices to prevent the occurrence of hazards were not consistent. I turn next to organizational control over the physical facilities of the health unit.

Control over Physical Plant

Ownership, control, and resource acquisition are concepts that are associated with organizational performance (Daft, 1989; Pugh, Hickson, Hinings, & Turner, 1969) and this research links them with organizational hazard surveillance. When the individuals who are exposed to hazards are not the individuals with control over the solutions, hazard surveillance becomes less effective. Interorganizational linkages are a contextual dimension of organizations. Regardless of their contracts for space or services with organizations in their environment, health units were affected by uncertainty about hazards and limitations in the relevant legislation, factors which only enhanced the variations in hazard surveillance. Although no questionnaire item dealt with building ownership or maintenance and no subject made it apparent when responding to open-ended items, ownership and control patterns clearly emerged during analysis of the individual interviews.

Both circumscribed and generalized problems had to be confronted in CHNs' physical work environments (e.g., ice on the parking lot, maintenance and repair of the HVAC system). Central to the resolution of those hazards were ownership of property, control over contractual arrangements for maintenance and cleaning services, and access to economic support for dealing with the problems.

Only one health unit owned its buildings. "The government, of course, is just not making any motions as far as buildings are concerned," noted one CHN. For some health units, ownership was distant (e.g., provincial buildings) and services were brokered by property management companies. One HU5 subject related:

> I went directly to [name of] Property Management who are contracted and they do virtually nothing, nothing, nothing. If you want a carpet cleaned, they will have to make special arrangements with you. The health unit will then have to pay for that.

Added another, "You can voice your concerns, you can call them over and over again and feel like you're getting nowhere." A third stated:

> In this situation where . . . you've got several community agencies in one building you would have to . . . be politically active to get somebody in here to look at, for example, the ventilation or whatever. I don't think that . . . two people could go out and make a lot of difference. You would have to lobby the other [employees] . . . take surveys.

For other health units, owners were somewhat more accessible (e.g., county, city, financial institution). Yet an HU3 CHN explained:

> We've complained to headquarters or to the bank people here, the manager, and he says it's not in his control. It's headquarters in [name of place] and the man who keeps coming to repair the furnace says the furnace needs to be changed. And we need a new furnace, but the bank is not putting one in.

Examples of comments in HU2 and HU3 were: "The city's not going to come in and redo the ventilation system for us if they don't feel it's necessary"; "the county would love to move us out of this building. They want it back. So they're not about to do anything to the building either"; "needs a new furnace. We can't do that. We only rent the building"; and "even though we're renting the building, they say we have to pay for the air conditioner." A longer comment captured the essence of the problems:

> Even though we wish to change our building, we can't. We're locked in to renting the space we can afford and what's available . . . . We can't change the parking lot. We can't change the sidewalk. We can't repair the stairs. We can't

> install an elevator . . . . We can't always guarantee that . . . the air conditioning or the air ventilation is working well.

In sharp contrast to the above comments, there was not one comment among the CHNs employed in buildings owned by the health unit about difficulties related to building maintenance. In addition, those CHNs were consulted regarding design when a new building was planned and were represented on the building committee. According to one CHN, "We've had lots of input."

Control over contractual arrangements for cleaning services also varied among health units. "They [the county] hire the janitors and therefore we can try to get some changes, but it's . . . difficult"; "it seems almost impossible to get a provincial building cleaned to an adequate, forget about an excellent, just an adequate level"; and "we actually have to jump through hoops . . . the janitor isn't under contract with us," were examples of comments. A managerial CHN's comment illuminated the difficulties of dealing with building-related problems in a management position:

> A message can come in . . . and then that message . . . is given to the appropriate person. And action isn't taken right away . . . . then that creates a bit of apprehension in you . . . . You have to be very sensitive of [sic] the fact that these other people are your colleagues.

That may explain why another CHN stated, "Sometimes you bypass the lines of communication if you want action." She explained, "When things are moved along, they get diluted." Remote control over contracts and absentee landlords only hinders or aggravates the resolution of problems.

Each of the health units is 100% publicly funded. "The prevailing philosophy [is] that times are tough. So budget restraints sometimes, I believe that some actions aren't taken simply because of lack of funds," commented one CHN. A staff CHN described the worry about the budget, "The budget almost becomes a personal concern . . . . that overrides even your concern about your clients at times." According to Key (1985, p. 384), "allocation of resources cannot be based on good public health practice and professional judgement entirely, but must [be] balanced against many other considerations not the least of which is politics."

By recognizing organizations as open systems interacting with their environment, the pressures and counterpressures located externally are recognized (Daft, 1989; Meyer, 1978; Molnar & Rogers, 1976). For these health units, dispersed ownership, remote control over contractual arrangements for building maintenance and cleaning services, and the struggle to obtain economic resources negatively affected organizational hazard surveillance. Longest (1990), in writing about the American health care sector, states that voluntary and involuntary interorganizational linkages cannot be ignored and draws attention to a number of costs associated with interorganizational linkages (e.g., loss of autonomy, loss of flexibility, compromise). Hall and Quinn (1983) make an argument that the context of organizations includes public policy and that organizations cannot be studied in isolation from it. The intersection between public policy and organization theory is most apparent in the interdependencies of interorganizational fields which Dimaggio (1983) suggests are structured by government policy. Proponents of "healthy public policy" recognize that interrelationships among public policies have implications for the health of the populace (Green & Kreuter, 1990; Hancock, 1985; Labonte, 1989; O'Neill, 1989/90; Rossignol, 1991; Stachtchenko & Jenicek, 1990). This research emphasizes those relationships in terms of control over work hazards.

Political decision-making bodies determine resource acquisition in the health unit sector and do not necessarily respond to organizational motivations and behaviour such as goals for employee health and safety. Although occupational health and safety legislation is formulated by government bodies, its enforcement and application in the health unit sector may not be considered during the allocation of scarce and valued resources. Moreover, organizational acquisition of resources is contingent upon legitimacy claims, if not performance. Public agencies have no direct method of evaluating their services vis-à-vis the resources acquired to provide the services (Cameron & Whetten, 1983a; Molnar & Rogers, 1976). Among the varied stakeholders (constituencies) involved with health units (e.g., government, clients, community agencies) are different perspectives on employee health and safety. Goals for organizations to "do good" contrast with goals that they "do well" (Pennings & Goodman, 1977). Doing good enhances legitimacy goals, but doing well enhances performance goals (Cameron & Whetten, 1983a).

Constituencies determine the diversity, stratification, and incompatibility of goals and influence organizational decisions to maximize, satisfice, or sequence goals (Cameron & Whetten, 1981, 1983a; Connolly, Conlon, & Deutsch, 1980; Daft, 1989; Friedlander & Pickle, 1968; Hannan & Freeman, 1977; March & Simon, 1958; Miner, 1982; Pennings & Goodman, 1977; Pondy, 1970; W.R. Scott, 1977; Scott, Flood, Ewy, &

Forrest, 1978; Seashore, 1977). Briefly, constituencies hold diverse criteria for organizational performance (Daft & Steers, 1986). In other words, vested interests in the organizational environment have an effect on employee health and safety (Walsh, 1988). Not only is occupational health and safety a medical and technical problem, but it is also an economic and political problem (Wegman, Boden, & Levenstein, 1975). This category of *control over physical plant* is the category that makes most apparent the influences in the organization's environment (a contextual dimension) on organizational hazard surveillance. The fourth and last category focusses on a structural dimension (hierarchy of authority) which affects the transfer of hazard information.

Hazard Information Transfer: "Up, Across, and Down"

Individually and collectively, CHNs used non-specific channels of communication to make vertical and horizontal linkages in the organization regarding their perceived work hazards. The structural dimension defined by the hierarchy of authority takes on more importance for organizational hazard surveillance when structures for surveillance are missing or inadequate and conditions are less than conducive to collegiality. The underlying issue for organizational hazard surveillance is the transfer of hazard information within a context of power and control in the organization.

Health units had structured office, subunit, regional, and general meetings where collective issues could be addressed by CHNs. An HU3 CHN commented that the staff meeting is "a good forum for raising issues." A sub-office HU3 CHN related, "All the staff feel that they can publicly say precisely what's on their minds and nobody feels . . . inhibited or . . . at risk by doing so." She added, "I can't recall a situation or a circumstance where an individual has regretted voicing a concern over an occupation[al] or a work . . . stressor." Taking another perspective, her colleague contributed, "Other nurses that have been here a long time say they talk and talk and talk and they're listened to, but nothing is ever done." Sharply contrasting with these comments is an HU2 CHN's observation:

> Everybody feels . . . in a very threatened position, how far you take your concerns these days . . . . What they [CHNs] had been saying at the [staff] meeting had been transcribed and . . . they were told that they had to have their attitude [regarding a stressor] changed by the end of six months.

A colleague related, "We started a group to have communication from the staff to the Board, but everything has to go through management so we really do not have a direct line of communication. If we have a concern, it's censored."

In HU4, management actively sought employee input on matters directly affecting their work performance (e.g., new building design, new CHN applicant, office equipment). To illustrate, an HU4 CHN reported, "When our full-time position, when our nurse left [sic] . . . we are invited to sit in on all of the interviews as well . . . . And then [the manager] will ask for our input, 'Do you think you could work with this person?'." Another CHN related, "When we moved in [to the office], we could look at the chair and make sure it was comfortable." The CHNs in HU4 also used the collective mechanism of a sub-office meeting to discuss concerns. "When we have our office meetings we . . . talk about them [hazards and stressors]," explained one subject. A colleague added, "I don't feel that [it's] effective . . . to do it as one [person] because we need to do it as a group and say . . . 'This is a concern for us'."

Talking also occurs in HU5 staff meetings. "In our department," stated one CHN, "I think that all the staff feel that they can very publicly say precisely what's on their minds and nobody feels . . . inhibited or . . . at risk by doing so." Another HU5 subject stated, "Our strengths as a group . . . are just being able to talk about it [work hazard] quite openly." Colleagues in the same health unit, however, made dissimilar comments: "I would like to see . . . better communication and have the feeling that what I'm saying means something"; "we've always felt like we wanted to be more involved in decision-making"; and "I know that there won't be a lot . . . done."

In addition to collective mechanisms, subjects reported using verbal and written methods on an individual basis for transmitting health and safety concerns. An HU2 CHN reported, "I would just keep pressing it . . . . I [would] bring it up a couple of weeks later with a little added rationale, more of a rationale, different rationale." An HU4 CHN commented, "We have a very good supervisor. She's very open and receptive . . . . I would feel comfortable if I had a problem to go and tell her about it." A colleague contributed, "You know she will listen to you and she will take it up to . . . the CEO and something will [happen], . . . you'll have an answer back." Another HU4 CHN related, "People will listen to you and say, 'Yes, that's legitimate . . . . We will bring it up at a management team meeting'."

Community health nurses in HU1 cautioned: "You have to have very well-documented instances"; "usually when things [are] written, something gets done"; and "you'd have to have a clear-cut case." In HU2 as well, a subject stated, "If you can document what's going on, you've got more strength." In contrast, an HU5 CHN commented, "We wrote a proposal to Administration a year and a half ago . . . . It's still being held in the desk of the administration."

The importance of using correct channels of communication in the hierarchy of authority was emphasized by the CHNs in four health units. For example, an HU3 CHN remarked, "It seems very open and relaxed, but there are definite lines of communication and you don't contravene them if you want to get anywhere." In HU5, a subject commented, "You always have to go through . . . your line of communication. You have to be aware of the steps . . . and kind of refuse to back off. Be persistent in, in bringing . . . your concern forward to the highest level." An HU2 subject related, "We go to the assistant manager, to the manager and then she takes it to the director and the director to the Board . . . . That's the channel of communication and that's the way it's done." A colleague suggested, "It's I guess up to us to raise the issue and, you know, the chain of command has to be followed." An HU4 subject also reported, "If there was a concern, you bring it to your local supervisor and . . . she probably would take it to the CEO . . . and the CEO would make the decision if it should be a management team [item]." Only in HU4 did a CHN allude to collective persistence with the hierarchy of authority. "We're not a bunch of rebels or anything," she said, "but I think we're confident enough in what we do and what we see as needs that we wouldn't . . . just sit there [if management discounted the concern]."

Following the channels of communication can be less than productive. For example, transcriptions of meetings were used to discipline staff. Less threatening, but also not productive was the risk of delayed responses when communication channels were followed. "Going through channels can be an added stressor [laughs] . . . it slows things down sometimes," stated one CHN. Cold buildings and blizzard conditions were two reasons given for circumventing lines of communication. "It [a request] went from our supervisor to the next supervisor to the medical officer of health and by the time we got the okay to go home, I didn't make it all the way home," explained one subject. In addition, "when things are moved along, they get diluted," according to another. To illustrate, one CHN clarified:

> The supervisors will carry any concerns forward . . . depending on whether or not they . . . have the same concerns about that . . . issue. How hazardous, how dangerous it is, they may not . . . give it the same emphasis or urgency that you would.

Another CHN commented, "We can voice all we want our concerns . . . whether they feel they're valid or not that's another matter."

Subjects focussed most often on the transfer of information "up". Indeed, few had comments regarding communication "down" about hazards or stressors. In HU5, CHNs stated, "It can be frustrating at times . . . with Administration in . . . not letting us know what's going on." In sharp contrast, HU4 management was credited with keeping its employees informed and supported. Subjects reported: "That's one thing about our health unit. They don't keep us in the dark. They'll let us know"; "it comes from the CEO down to [the manager]. [The] CEO will often put it down in a little newsletter she puts in our pay cheque"; and "management people here are very open to concerns and questions and always finding solutions or getting back to you." However, an HU3 CHN stated, "The biggest stressor we have is the problem of inconsistency and insufficient communication [down]." Another referred to the *delay* in responses moving down the channels.

Communication "across" the hierarchy also carries the risk of delay. A managerial CHN described a delayed response when hazard information was transmitted laterally to a colleague in another subunit for action. Most frequently, communication "across" was reported at managerial levels and within the management team meetings. Although "personality hazards, the consistency issue . . . favouritism" were not discussed at that level in one of the health units, the team approach was used for dealing with other issues (e.g., work space). "I can talk to other managers [regarding stressors]," reported one CHN. Weekly information-sharing meetings at management level in one health unit provided the opportunity to inform colleagues at a managerial level of work hazards. A staff CHN reported, "Once action becomes important then you find that it has to move *up* [italics added] through the channels and the managers would then have to be involved and it would become *between* [italics added] the managers." In short, hazard information transfer is constrained by power and authority relations in the organization.

Power and Dependency in Organizational Hazard Surveillance

The theme of power and dependency runs through all four of the categories emerging from the interview data on organizational hazard surveillance. This finding is in accordance with the work of other researchers. Dependency, inequality, and subordination are linked to power relations (R. Edwards, 1979; T. Johnson, 1980; G. Morgan, 1986; Perrow, 1986; Ritzer & Walczak, 1986). Krause (1977), Krackhardt (1990), Mechanic (1962), and Pfeffer (1981) demonstrate how control over access to individuals, physical plant facilities, and information contributes to dependencies. Strategic contingencies theory considers the power differentials created by interdependencies among organizational subunits (Cohen & Lachman, 1988; Hickson et al., 1971; Hinings et al., 1974). Using a metaphor of organizations as instruments of domination, G. Morgan (1986) throws light upon the exploitative nature of intra-organizational power in terms of hazards in the physical and psychosocial work environments, but fails to capture the extra-organizational influences on work hazards. According to Pettigrew (1985), power in the organization can only be understood in relation to external power. In Clegg's (1989) use of metaphor, power is a circuit diagram, and the three circuits of power link external and internal influences on organizational performance. Clegg's amplification of the concept of agency (episodic power) to include organizations as well as human actors captures both structural and contextual dimensions of these organizations. Power is ubiquitous, inevitable, and organizationally generated (Perrow, 1986; Pfeffer, 1981; Spencer, 1990). According to Zey-Ferrell and Aiken's (1981) critique of dominant perspectives in the study of organizations, power should be placed at the centre of analysis.

Power differentials were created in these five health units by interdependencies both *among organizations* and *between organizational subunits*. At the same time, power differentials existed in the hierarchy of authority (vertically) between management and CHNs and (horizontally) between managers. Furthermore, power was enhanced or hindered by gender. Health unit organizations were dependent upon the provincial government for economic resources and elected officials from local government for governance; corporate or government landlords for action on hazards in the physical work environment; and private sector contractors for compliance with contractual arrangements for cleaning and maintenance. Community health nurse subunits were dependent upon Environmental Health subunits for information, evaluation, and action with regards to work hazards. For Emerson (1962, p. 32), "power resides implicitly in the other's dependency."

In this exploratory research, three findings regarding power and organizational hazard surveillance stand out: the dependency of health units on linkages with organizations in their environment; the subordination of women to men when women are numerically dominant and parallel in the hierarchy of authority; and the dependency of the CHN subunit on another organizational subunit. Issues related to gender and to the political economy of health promotion were raised earlier. I focus now on the CHN subunit.

How is work hazard surveillance for CHNs in health unit organizations constrained by subunit characteristics within the context of power and dependency? Although it could be argued that the gendered subunit is a structural condition when subjects are occupationally segregated by sex,[5] I will set aside gender. Strategic contingencies theory (Cohen & Lachman, 1988; Hickson et al., 1971; Hinings et al., 1974) which excludes gender as a variable of interest, informs the discussion. The theory considers the power differentials created by interdependencies among organizational subunits and focusses on structural conditions rather than individual actor characteristics. Using the surveillance of work hazards in the organization as a reference point, I examine three strategic contingencies: centrality, substitutability, and coping with uncertainty.

Hickson et al. (1971) define the centrality of a subunit in terms of the pervasiveness and immediacy of its workflows within the organization. Within the context of work hazard surveillance in a bureaucracy where professionals work relatively independently (Mintzberg, 1979), the concept of centrality requires further clarification. Taking as focus the centrality of the subunits for surveillance of work hazards, it follows that workflow is defined as work activities directed towards hazard surveillance. How central is the CHN subunit to hazard surveillance (recalling that surveillance includes prevention as well as intervention)? Only one-third of the sample reported educational exposure to occupational health and just 5% were certified in occupational health nursing. If the perception of one CHN who stated, "it's not really a community health nurse ball park issue I think" is representative of the majority, specialized preparation was probably not a priority of these subjects.

With respect to legislation, an organizationally initiated orientation to WHMIS provided CHNs with access to circumscribed hazard information in HU1 and HU4, but not all CHNs appeared to retain the information. Among those who did, subjects explained: "When we looked at the label we knew what the product was"; "we were more conscientious about the disinfectants we use"; and "it's just much more organized than it used to be." Three CHN subunits did not receive a WHMIS orientation. Given comments such as "I've never heard of it. What is it?", it could be expected that CHN subunit centrality would be weaker where a WHMIS orientation was not conducted. Neither pervasiveness nor immediacy appear to be strengths of the CHN subunits with respect to hazard surveillance, but there are differences, and HU1 and HU4 have an edge.

Just as the concept of centrality requires refinement, so also substitutability. By expanding on Hickson et al.'s description of substitutability as the "ability of the organization to obtain alternative performance for the activities of a subunit" (p. 221), it becomes the availability of alternatives for the hazard surveillance activities of the CHN subunit. Community health nurses' references to the activities of another organizational subunit, Environmental Health, facilitate operationalization of the refinement. For example, an HU1 CHN reported, "In that case [biological hazard] we let the public health inspectors look after it . . . . And if it is . . . chemical in nature . . . it would fall under Public [Environmental] Health." Two HU3 CHNs explained, "They [public health inspectors] have access . . . to some of the equipment that could be used to test for . . . some things", and "with the help of the health inspector we did manage to get the old caretaker's contract not renewed." In their own words, they indicated the availability of an alternative. That alternative was used by HU2 CHNs to approach government experts on a building problem and for the identification of body lice. Hickson et al. (1971) attribute lower subunit power to substitutability.

According to Hinings et al. (1974, p. 40), "coping with uncertainty is the variable most critical to power, and is the best single predictor of it; but it is far from being the only factor contributing to power." Like the concepts of centrality and substitutability, uncertainty is particularized to hazard surveillance and CHN subunit coping mechanisms. Since uncertainty is "a lack of information about future events so that alternatives and their outcomes are unpredictable" (Hinings et al., 1974, p. 27), uncertainty about hazards and exposure data is the focus. Of the three subunit coping strategies described (Hickson et al., 1971), coping by prevention and by information are the most applicable.

Preventive routinization reduces uncertainty (Hickson et al., 1971). In all 5 health units there were some written safety policies and procedures, but differences existed. An HU3 CHN explained, "It's our policy that we drive with our lights on," but an HU5 subject stated, "one concern is that we don't have a lot of written policies and procedures." Subjects in HU5 described a reactive rather than proactive stance by administration, which effectively tempered their efforts at prevention (e.g., submission of proposals related to work hazards). In HU2, CHNs reported conflicting perceptions regarding organizational support for CHNs to take preventive action to reduce work hazards (e.g., winter driving). Although an alarm system existed in HU2 for CHNs' use, requests by HU3 and HU5 CHNs for such a system had not been successful. Preventive maintenance for health unit vehicles also varied. What becomes clear is that prevention has a monetary component and the latitude of preventive activities is linked to management's formally legitimated authority. Without budgetary control and without the authority to determine policies and procedures, the CHN subunits were limited in their efforts to cope with uncertainty by prevention.

Community health nurse subunits were further limited in their effectiveness for work hazard surveillance without the information that would permit anticipation of work hazards. Only HU1 and HU3 had some type of committee for addressing health and safety issues. Solely HU1 and HU4 had orientated their CHNs to WHMIS legislation. Collective bargaining units in the two unionized health units did not have health and safety in their contracts. Two-thirds of the CHNs had no formal exposure to occupational health and safety.

In a study of health care clinics using strategic contingencies theory, Cohen and Lachman (1988) showed that coping with uncertainty, and centrality (pervasiveness) of work relations were more significantly related to power than was non-substitutability. In this present study, whether examining centrality, coping with uncertainty, or non-substitutability, the HU4 subunit provided evidence, through CHN perceptions of structural conditions, of a subunit with greater latitude in terms of intra-organizational power and organizational hazard surveillance.

Elements of a Theory

Reconceptualization of the problem of work hazards permitted patterned regularities in these five health units to be viewed from a new perspective and advanced the discovery of a basic social structural process (BSSP), organizational hazard surveillance. By maximizing the exploratory nature of the research, as many as possible of the organizational factors associated with CHNs' work hazards were identified; a search for relevant factors is the formulative stage in theory-building (Field & Morse, 1985). The process of developing a substantive theory permits the analyst to transcend incidents and situations and develop more analytic concepts for capturing the essence of diverse data (Glaser, 1978). Description alone would not have been adequate for understanding the variation across these organizations. An iterative analytic process led to the identification of four major categories comprised by concepts representing structural and contextual dimensions of organizations. Category generation derives from the observed regularities when grounded theory methodology is used (Marshall & Rossman, 1989). Figure 10 is a diagram of the elements of the four conceptual categories and their relationship to organizational hazard surveillance. Each category, and the organizational concepts incorporated by it, constitutes one component of organizational hazard surveillance.

The relative importance of each category cannot be determined at this stage of theory development. *Hazard information transfer* could be fundamental to the process of surveillance, but it implies awareness and knowledge which might not exist without the *structures for surveillance*.

On the other hand, without the *conditions for collegiality* observations and feelings might not be articulated and acknowledged beyond this intrapersonal level. At first glance, *control over physical plant* would appear to be less central to the process, given the indications by subjects that psychosocial hazards were the most significant to them. However, without research on the additive or synergistic effects of hazards in the physical and psychosocial work environments, this category cannot be considered less important. Furthermore, safety in the physical work environment was a significant hazard for CHNs. The empirical data suggest that an index created by the elements of each category might identify the organization which is more effective at organizational hazard surveillance, even with equal weighting of categories. Some combinations of these categories, however, might differentiate the effective organization more readily than others. Nonetheless, each category represents conditions that are necessary for organizational hazard surveillance and together the categories identify variations in that surveillance.

"Writing is but a slice of a growing theory" (Glaser, 1978, p. 140). The theoretical objective of this research was to contribute to substantive theory development on the organizational factors underlying work hazards by providing the elements of a grounded theory. A number of elements are identified. "Any theory must start with a finite number of variables and presume continual development by their alteration or deletion, or by the addition of new variables" (Hickson et al., 1971). These research findings constitute a theoretical formulation of the reality perceived by CHNs in five health units. They represent the initial stage of theory development. Further research must test the theory against data.

Footnotes

1 Triangulation with interview and focus group data occurred in order to (1) rank order the hazards by their importance to subjects and (2) enrich the discussion.

2 The analyst has the option to code only the interview segments that are related to the research topic (Miles & Huberman, 1984; Strauss & Corbin, 1990). There will always be material that is not useful for the chosen research topic (Field & Morse, 1985; Strauss & Corbin, 1990). In this research, the entire interview was coded for every respondent, whether or not the topic of discussion was organizationally directed.

3 For example, a corporate-enforced policy of female sterilization to avoid corporate-imposed exclusion from hazardous jobs.

4 Specifically, the Act states:

> "Every worker shall, while engaged in an occupation, (a) take reasonable care to protect the health and safety of himself [*sic*] and of other workers present while he [*sic*] is working, and (b) co-operate with his [*sic*] employer for the purposes of protecting the health and safety of (i) himself [*sic*], (i.1) other workers engaged in the work of the employer, and (ii) other workers not engaged in the work of that employer but present at the work site at which that work is being carried out" (p.4).

5 Clegg (1989) recognizes that aggregates of women may be handicapped in terms of strategic power.

Figure 10. Elements of a theory of organizational hazard surveillance.

Conceptual categories	Organizational concepts
Conditions for collegiality	
Physical proximity	Spatial complexity
Gender equality	Gender configuration
Structures for surveillance	Formalization Standardization
Control over physical plant	Ownership of property Control over contracts Resource acquisition
Hazard information transfer	Hierarchy of authority

CHAPTER 8: CONCLUSION

> I have the right to be as healthy leaving as I am coming. I have a right to a healthy environment (Subject).

> Nurses as workers have the right to expect their work environment to be safe and the people to whom nurses provide care have the right to expect that nurses take into consideration the possible causal relationship of their jobs to their health problem (Brown, 1981, p. 172).

Healthy Work Environments: The Challenge

Healthy environments are a mechanism for promoting individual and collective health (Buck, 1985; Epp, 1986; Health and Welfare Canada, 1990; Perkins, 1991; Premier's Commission on Future Health Care for Albertans, 1989; World Health Organization, Health and Welfare Canada, & Canadian Public Health Association, 1986). At provincial, federal, and international levels, normative documents now recognize the salience of physical, social, economic, political, and spiritual environments for the promotion of health at work and leisure. The significant role that health care institutions must assume in health promotion for their *employees* as well as for the public now receives an emphasis not apparent in the past. Federal guidelines for health promotion state specifically that *staff* of health care facilities are to be enabled to influence their physical environment both inside and outside the facility (Health and Welfare Canada, 1990). Indeed, all levels of the health care organization are expected to be involved in the promotion of health within the facility, from governing boards and senior management to staff. As early as 1979, the World Health Organization Working Group on well-being in the workplace argued for the need to "treat the organization, not the individual" (Weinstein, 1985, p. 53). It is incumbent upon senior management in health care facilities to conduct assessments of the organizational strengths and weaknesses and to seek input by staff in order to achieve environments supportive to health and well-being (Health and Welfare Canada, 1990). If the physical, social, spiritual, economic, and political environments that affect health are to be addressed, every level of the health care system must be involved, a mandate emphasized at the 1991 global conference on health promotion at Sundsvall, Sweden (Perkins, 1991). The onus is on health care organizations to take a proactive stance towards establishing environments that are conducive to health for their employees and for the public they serve.

Do health units in Alberta promote health within their working environments for their employees? Certainly a background paper on accountability in health units acknowledges the working environment as one indicator of organizational effectiveness (Alberta Health, 1991a). It states, "[Effectiveness is] the extent to which the organization provides an appropriate work atmosphere for its employees, provides appropriate opportunities for development and achievement and promotes commitment, initiative and *safety* [italics added]" (p. 35). According to the Ottawa Charter for Health Promotion (World Health Organization, Health and Welfare Canada, & Canadian Public Health Association, 1986), work should be "safe, stimulating, satisfying and enjoyable" and a "source of health" (p. 427). For Epp (1986), community health services must assume a key role in the creation of healthy environments and in dealing with the three major health challenges: reducing inequities, increasing prevention, and enhancing coping. Health care facilities should "become role models of healthy environments and practices" (Premier's Commission on Future Health Care for Albertans, 1989, p. 64), a recommendation supported by the Alberta Association of Registered Nurses (1990).

Before presenting the conclusions of this research, it is important to discuss the limitations. An exploratory study conducted with 57 subjects in 5 autonomous organizations in one province is limited in its generalizability. However, the precautions taken during sample selection may permit cautious generalization of some results to all but two of the health units in the province. The health units of Calgary and Edmonton constitute a population apart that merits separate consideration because of marked differences between it and the other 25 health units. Because of their size, complexity, standardization, formalization, technological differentiation, geographical circumscription, personnel configuration, and collective bargaining status they were excluded from the population of interest. This reduces the potential for generalizability to the health units outside of Calgary and Edmonton in the province.

On the face of it, purposive and quota sampling create limitations. A strictly randomized health unit sample, however, might not have captured the diversity of organizational differences relevant to size, geographical location, personnel configuration, urban/rural environments, and collective bargaining. By including as many as possible of the manifest differences in the sample, this study of organizational factors and work hazards ensured representation of known characteristics that were shared by health units across the province. A minimum of any two health units in the sample shared most organizational characteristics selected for representation (see Table 2 in Chapter Three). Next, the sample includes voluntary and solicited participants. If voluntary participation poses a threat to external validity, it is counterbalanced to some extent by the inclusion of one health unit that indicated no interest in participating until it was approached. The potential for having exemplars only in the voluntary participants did not become reality, as confirmed by the wide variation in results.

Similarly, threats to the external validity because of quota sampling are also tempered by the pretest design. The questionnaire and interview were pretested with CHNs employed in one of the excluded health units as well as with CHNs in health units comprising the population of interest. The focus group structure and content were pretested in the other largest health unit. Thus, opportunities were provided for the inclusion of hazards encountered in large health units or other health units, in the first instance, and provision was made for non-study CHNs to dispute the perceived work hazards, in the second. Both staff and managerial CHNs in the pretests concurred with the nature of the hazards. The likelihood that the study captures the nature of occupational hazards for CHNs in other health units is increased by the shared mandate of all health units under the Public Health Act (1984).

Although a nonrandom sample of 57 CHNs cannot be considered representative of the approximately 400 CHNs employed in health units outside of Calgary and Edmonton (Alberta Health, 1991b) in terms of specific work hazards, it is feasible that all CHNs are exposed to the *categories* of hazards identified by the sample. The same categories were identified by subjects in every one of the five health units and may represent issues of more general concern. Because of divergence in the relative importance of two categories (psychosocial and safety), this aspect of the results cannot be generalized to the remaining CHNs but does contribute to hypothesis generation. It is possible that the mixture of study participants and nonparticipants in the focus groups contributes to the divergence by virtue of the fact that nonparticipants were not included in the process of identification, dialogue, and reflection which began with questionnaires and terminated, for the purposes of this research, with the focus group. Since there was no attempt made to distinguish between participants and nonparticipants on anonymous written responses, the differences in relative importance of two categories of hazard cannot be treated as an artifact of the focus group design nor as an indication of ambivalence among the CHN population. This finding is clearly limited in its generalizability. Last, although the categories may be generalized, the totality of hazards is not. It is not possible to claim that the specific hazards within categories represent all actual or potential hazards to which CHNs in the 25 health units might be exposed, because of the nonrandom sample. Pretests of the questionnaire with 26 CHNs in three other health units increased the scope of potential hazards per category, but cannot be expected to have identified all possibilities for CHNs in this province.

Quota sampling of subjects permitted saturation of the major *conceptual* categories within each health unit, but quota sampling of health units likely precluded identification of all the organizational categories that have relevance for hazard surveillance. However, because of the confirmatory function of multiple triangulation, the selection of the health units on the basis of similar and dissimilar organizational characteristics, and the consistency of the major conceptual categories across all five autonomous health units, these categories may be cautiously generalized to the other 20 health units with some degree of confidence. By grounding the categories in the data, they should fit the substantive area and be broad enough to apply beyond the particular context of the research (Strauss & Corbin, 1990).

Repetition of the procedures with the same individuals would not produce identical results because of the consciousness-raising and reflection that occurred following involvement in this research process. The questionnaire increased subjects' awareness by its comprehensiveness, the interview facilitated reflection (and in so doing became an intervention), and the focus group permitted a collective consciousness to develop. In contrast, the validity of the results increased because of the demonstrated congruence among findings using data source, methodological, and unit of analysis triangulation.

The questionnaires, interviews, and focus groups all collected cross-sectional perceptions which preclude causal inferences. However, the time lapse between the interview and questionnaire in stage one of data collection and the focus group in stage two permitted reflection and dialogue to occur and surface in the collectivity, thus introducing a longitudinal component regarding the perceived hazards. Also, the fact that hazard data were collected over a period of four months in the spring of the year and discussed during a two month period in the winter increased the likelihood that seasonal variations in hazards would be included. Collecting data without a longitudinal aspect would have posed the risk of missing caseload and seasonal variations (e.g., workload, travel hazards, sick building syndrome). Although the subjectivity of respondents might pose threats to the validity of hazard data, subjectivity encouraged exploration of the nature or quality of hazards. Since only psychosocial hazards had been identified in previous research on CHNs, and not comprehensively, a study seeking objective data for all hazards would have been premature at this point in time.

Do the results of this study suggest that health units in Alberta promote healthy work environments for community health nurses? The first conclusion of the research is that community health nurses employed in the health unit sector of the Province of Alberta are a vulnerable worker population. Their physical work environments contain biological, ergonomic, physical, and safety hazards which are interrelated with organizational factors. The structural dimensions of formalization, centralization, complexity, and hierarchy of authority and the contextual dimensions of technology, goals, and organizational environment all play a role in the existence of those hazards. The psychosocial domain of the workplace is the source of the most significant hazards for CHNs. Stressors in the external and internal environments of health unit organizations are inextricable from organizational factors such as organizational complexity, authority structure, and personnel configuration. The research supports conventional wisdom that psychosocial stressors predominate over more tangible hazards in the service sector. At the same time, it underscores the fact that safety hazards exist in the service sector. Community health nursing is intrinsically a hazardous occupation. Identification of the organizational factors associated with CHNs work hazards provides avenues for reducing the vulnerability.

A second conclusion is closely related to the first. Organizational factors are inseparable from the work hazards perceived by community health nurses. The organizational context of hazards in the physical and psychosocial work environments cannot be ignored. On empirical and normative grounds, the factors in organizations' internal and external environments that detract from the promotion of healthy work environments must be addressed. If health care organizations are to be role models of healthy work environments for the public good, a closer examination is required of the structural and contextual dimensions that are associated with hazardous exposures. Stressors and hazards in the work environments of CHNs appear more susceptible to organizational than individual control. The onus is on public health units to be at the forefront of exemplary practice.

A third conclusion is that the performance of health units varies with respect to work hazard surveillance. Not all health units are working effectively towards healthy environments for their CHNs. In this respect, organizational performance may be conceptualized on a continuum. A compilation of the positive organizational characteristics in this sample could serve as a guide for organizational performance. The effective health unit would have a consolidated head office where interdisciplinary interaction is promoted and would ensure multidisciplinary representation in all of its sub-offices. Gender equality would be promoted throughout the organization. Management would seek direct control over the contracts for cleaning and maintenance services and ownership of its buildings. A joint health and safety committee would meet monthly and be effective. All employees would be covered by workers' compensation insurance. New employees would be orientated to all policies and procedures for reducing work hazards and current employees would receive inservice education on workplace health and safety issues. The necessary personal protective equipment would be available and all staff would be orientated and updated on relevant legislation. If an employee assistance program were implemented, it would be characterized by a proactive design that addressed the psychosocial work environment.

Not one health unit in the sample exhibits all the above characteristics. Each unit is characterized by strengths and weaknesses, but one unit leads the way. The organizational performance of one health unit in particular reflects the majority of the positive characteristics in the composite outlined above.

A fourth conclusion is that multiple triangulation strengthens confidence in the results of the research. Comparing and contrasting the data using theoretical, methodological, data source, and unit of analysis perspectives contributed to a more valid interpretation and synthesis of the work world of community health nurses in terms of health and safety. Initially, triangulation brought to light the paradox that the very professional who was to promote public health and healthy environments was neglected as a worker. Triangulation then led to the reconceptualization of the problem of work hazards and opened up for scrutiny the organizational factors associated with hazards. During the two stages of data collection, triangulation served confirmatory and exploratory functions and permitted constant comparison within and between health units. Finally, it put into practice the sociological imagination.

The fifth conclusion is that the elements of a theory for organizational hazard surveillance emerge from the data. The basic social structural process is organizational hazard surveillance and it encompasses four major conceptual categories and their properties (organizational concepts). Each of the four categories is a component of organizational hazard surveillance that accounts for the variation across health units. The category of *conditions for collegiality* addresses the relevance of gender equality for organizational hazard surveillance and the importance of physical proximity for promoting dialogue and knowledge exchange about hazards. The underlying concepts are two structural dimensions of organizations: spatial complexity and gender configuration (personnel ratios). This category demonstrates how inadequate the gender-neutral dimension of "personnel ratios" is for capturing the realities of a gendered workplace. *Structures for surveillance*, the second category, emphasizes the structural dimensions of formalization and standardization which provide consistent mechanisms for preventing or intervening in work hazards. *Control over physical plant*, the third category, brings to light the importance of the broader issues of ownership, contractual arrangements, and fiscal decisions in organizational hazard surveillance. The fourth category, *hazard* *information transfer*, locates one aspect of organizational hazard surveillance in the hierarchy of authority, illuminating vertical and horizontal sources of power. The theme of power and dependency runs through all four categories, identifying intra and interorganizational linkages which facilitate or hinder organizational hazard surveillance. This beginning theory meets the definition of a grounded theory by being "discovered, developed, and provisionally verified through systematic data collection and analysis of data" (Strauss & Corbin, 1990).

Directions for Future Research

This research points to a number of areas that should become the focus for further study. One priority would be to document the nature and frequency of the work hazards perceived by Alberta CHNs in a representative sample. Comparative (quantitative) research with CHNs in other jurisdictions would provide an opportunity for additional hazards to be identified and a data set large enough to have credibility with policy makers at provincial and federal levels. A more comprehensive study would collect objective as well as subjective data in the spring and the fall of the year, and search for an interactive effect between hazards in the physical and psychosocial environments, an issue raised by Lindstrom & Mantysalo (1987). In addition, it would collect data on injuries and illness as well as hazards, using objective and subjective measures.

Because of the exploratory nature of this study, a second priority would be to conduct research on organizational factors associated with work hazards in the settings of other community-based nurses using similar methods. An obvious beginning would be a follow-up to the Alberta Health (1991c) study of nurses employed in community settings. Since Mental Health, Home Care, and Community Health nurses were all more dissatisfied than Occupational Health nurses with their work-related health and safety, future research should focus on them. The work hazards of Home Care nurses should be investigated for a second reason. As the other nursing subunit in public health units and a subunit with a greater treatment-orientation and similarities with hospital-based nurses, Home Care nurses might be an even more vulnerable population.

As a third priority, two other subunits in public health units merit study: Clerical and Environmental Health. Both clerical staff and public health inspectors figure among the stressors of CHNs, have contact with the public, and are separate divisions in the same type of organization. The use of grounded theory methodology with those subunits would provide an opportunity to clarify, validate, or expand the findings of this study. It would also permit exploration of the organizational factors associated by a predominantly male subunit with its work hazards. Another perspective would be gained by obtaining the viewpoint of administrative personnel on organizational hazard surveillance.

A fourth priority is to test the theory of organizational hazard surveillance. Not only should it be applied to other health units, but it should also be applied in other organizational settings (e.g., hospitals). Given the limitations of a cross-sectional study, it would be advantageous to conduct a longitudinal study which would capture the evolving surveillance process more precisely.

Other areas for research are indicated by these findings. The educational process for CHNs should be examined for its curriculum content on occupational health and safety. In order to operationalize the normative directives from provincial and federal levels of government, the knowledge base of health professionals at the primary entry level into the health care system must be sufficient. Moreover, the political economy of health promotion must be supportive. This research suggests that a serious gap exists between normative and operative levels in the health care system with regard to healthy work environments and that healthy public policy is an aspiration rather than a reality.

Future research should also assist prevention-oriented organizations to assess their performance in promoting healthy work environments for their employees and for the individuals, families, and communities they serve. One focus of such research might be the ideological factors that influence hazard surveillance in organizations. The ideology of health promotion, professional ideologies, and the biomedical model could be powerful forces that hinder the development of organizational hazard surveillance. A second focus might be the perceived work hazards of the consumers of health unit services so that health unit organizations might assess their effectiveness in promoting healthy work environments for the public.

To conclude, the exploration, discovery, and analysis of the organizational factors associated with community health nurses' work hazards would not have materialized without the sociological imagination (Krisberg, 1978; Mills, 1959). The inseparability of organizational factors from work hazards is now evident and the factors are more clearly identified. These results provide guidance for health unit organizations that want to take seriously the challenge for health care facilities to be role models of healthy work environments.

REFERENCES

Agnew, J. (1987). Back pain in hospital workers. Occupational Medicine: State of the Art Reviews, 2(3), 609-616.

Aitkenhead, M., & Liff, S. (1991). The effectiveness of equal opportunity policies. In J. Firth-Cozens & M.A. West (Eds.), Women at work: Psychological and organizational perspectives (pp. 26-41). Buckingham: Open University Press.

Alberta Association of Registered Nurses. (1990). Response to the Rainbow Report: Our vision of health. Edmonton: Author.

Alberta Association of Registered Nurses. (1992). Official minutes of the provincial council. Meeting held in Edmonton, Alberta, May 27-29, 1992.

Alberta Community Health Nurses Society. (1988). Discussion Paper on Community Health Nursing Practice and Health Promotion. Edmonton: Author.

Alberta Health. (1989). Community and Occupational Health annual report 1987/88. Edmonton: Author.

Alberta Health. (1991a). Accountability and Alberta's Health Units. A background paper released by the Health Unit Accountability Task Group, Public Health Division, Alberta Health.

Alberta Health. (1991b). Annual report 1989-90. Edmonton: Author.

Alberta Health. (1991c). Perceptions of nursing worklife: A community-based study - Analysis and results. Edmonton: Author.

Alberta Occupational Health and Safety. (1991). Workplace Injuries Alberta 1990. Edmonton: Author.

Alberta Workers' Health, Safety and Compensation (1985). Occupational Health and Safety Division: Five year review 1979-1984. Edmonton: Author.

Alexander, J. (1988). The ideological construction of risk: An analysis of corporate health promotion programs in the 1980s. Social Science and Medicine, 26(5), 559-567.

Anderson, J.M., & Lynam, M.J. (1987). The meaning of work for immigrant women in the lower echelons of the Canadian labour force. Canadian Ethnic Studies, 19(2), 67-90.

Antonovsky, A. (1987). Health promoting factors at work: The sense of coherence. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), *Psychosocial factors at work and their relation to health* (pp. 153-167). Geneva: World Health Organization.

APHA responds to Rainbow Report. (1991, January). *APHA Newsletter*, pp. 3-4.

Arking, R. (1991). Modifying the aging process. In R.F. Young & E.A. Olson (Eds.), *Health, illness, and disability in later life: Practice issues and interventions* (pp. 11-24). London: Sage Publications.

Armstrong, P. (1987). Women's work: Women's wages. In G.H. Nemiroff (Ed.), *Women and men: Interdisciplinary readings on gender* (pp. 354-376). Montreal: Fitzhenry & Whiteside Limited.

Armstrong, P., & Armstrong, H. (1988). Women's work in the labour force. In A.T. McLaren (Ed.), *Gender and society: Creating a Canadian women's sociology* (pp. 275-315). Toronto: Copp Clark Pitman Ltd.

Ashforth, B. (1985). *Power and the organizational subunit*. Unpublished manuscript.

Astbury, C., & Baxter, P.J. (1990). Infection risks in hospital staff from blood: Hazardous injury rates and acceptance of hepatitis B immunization. *Journal of the Society of Occupational Medicine*, *40*, 92-93.

Ayoub, M.A. (1990). Ergonomic deficiencies: I. Pain at work. *Journal of Occupational Medicine*, *32*(1), 52-57.

Bailey, P., & Coutu-Wakulczyk, G. (1991). Tuberculosis surveillance in Northeastern Ontario health care institutions: What are we doing? *Canadian Journal of Public Health*, *82*(6), 421-424.

Baker, D.B. (1985). The study of stress at work. *Annual Review of Public Health*, *6*, 367-381.

Baker, E.L., Honchar, P.A., & Fine, L.J. (1989). Surveillance in occupational illness and injury: Concepts and content. *American Journal of Public Health*, *79*(Suppl), 9-11.

Baker, F. (1990). Risk communication about environmental hazards. *Journal of Public Health Policy*, *11*(3), 341-359.

Bakker, P.G.H. (1976). Carpets in hospitals. In L.F. Story (Ed.), *Carpets in hospitals* (pp. 1-11). Christchurch: Wool Research Organisation of New Zealand (Inc.).

Barker, J.A. (Speaker). (1988). Business of paradigms [videotape]. Burnsville, MN: Charthouse Learning Corporation.

Baron, R.A., & Byrne, D. (1987). Social psychology: Understanding human interaction (5th ed.). Toronto: Allyn and Bacon, Inc.

Barrett, M.V. (1991). Heat stress disorders: Old problems, new implications. AAOHN Journal, 39(8), 369-380.

Batey, M.V. (1979). Acquiescent response set: A source of measurement error. Western Journal of Nursing Research, 1(3), 247-249.

Baumgarten, M., Siemiatycki, J., & Gibbs, G.W. (1983). Validity of work histories obtained by interview for epidemiologic purposes. American Journal of Epidemiology, 118(4), 583-591.

Beaufoy, A. (1989). HIV infection: Employee education and infection control measures. Canadian Journal of Public Health, 80(Suppl 1), S31-S33.

Becker, C.E. (1982). Key elements of the occupational history for the general physician. The Western Journal of Medicine, 137(2), 581-582.

Becker, M.H. (1986). The tyranny of health promotion. Public Health Reviews, 14, 15-25.

Beechey, V. (1987). Unequal work. London: Verso.

Berg, B.L. (1989). Qualitative research methods in the social sciences. Toronto: Allyn and Bacon.

Berger, P.L., & Luckmann, T. (1967). The social construction of reality. Toronto: Anchor Books.

Bergum, V. (1991). Being a phenomenological researcher. In J.M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 55-71). London: Sage Publications.

Berlamino, C. (1990). Designing the qualitative research project: Addressing the process issues. Journal of Advertising Research, 29(6), S7-S9.

Birk, H.A. (1988). Initiating outreach home visits: PHN approaches. Unpublished master's thesis, University of Alberta, Edmonton.

Blau, F.D., & Winkler, A.E. (1989). Women in the labour force: An overview. In J. Freeman (Ed.), Women: A feminist perspective (4th ed., pp. 265-286). Mountain View, California: Mayfield Publishing Company.

Blau, P.M. (1963). The dynamics of bureaucracy: A study of interpersonal relations in two government agencies (rev. ed.). Chicago: The University of Chicago.

Blau, P.M. (1970). Decentralization in bureaucracies. In M.N. Zald (Ed.), Power in organizations (pp. 150-174). Nashville: Vanderbilt University Press.

Blau, P.M., & Meyer, M.W. (1987). Bureaucracy in modern society (3rd ed.). New York: Random House.

Blum, T.C. (1990). The organizational and structural context of employee assistance programs. In C. Calhoun, M.W. Meyer, & W.R. Scott (Eds.), Structures of power and constraint: Papers in honour of Peter Blau (pp. 321-344). Cambridge: Cambridge University Press.

Blumer, H. (1969). Symbolic interactionism: Perspective and method. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Boden, L.I., Hall, J.A., Levenstein, C., & Punnett, L. (1984). The impact of health and safety committees: A study based on survey, interview, and Occupational Safety and Health Administration data. Journal of Occupational Medicine, 26(11), 829-834.

Bodenheimer, H.C.Jr., Fulton, J.P., & Kramer, P.D. (1986). Acceptance of hepatitis B vaccine among hospital workers. American Journal of Public Health, 76(3), 252-255.

Bohrnstedt, G.W. (1983). Measurement. In P.H. Rossi, J.D. Wright, & A.B. Anderson (Eds.), Handbook of Survey Research (pp. 69-121). Toronto: Academic Press, Inc.

Bond, K. (1978a). Confidentiality and the protection of human subjects in social science research: A report on recent developments. The American Sociologist, 13(3), 144-152.

Bond, K. (1978b). Rejoinder. The American Sociologist, 13(3), 174-177.

Boxer, P.A. (1990). Indoor air quality: A psychosocial perspective. Journal of Occupational Medicine, 32(5), 425-428.

Bramwell, R.S., & Davidson, M.J. (1991). Reproductive hazards at work. In J. Firth-Cozens & M.A. West (Eds.), Women at work: Psychological and organizational perspectives (pp. 84-97). Buckingham: Open University Press.

Brattebo, G., Wisborg, T., & Sjursen, H. (1990). Health workers and the human immunodeficiency virus: Knowledge, ignorance and behaviour. Public Health, 104, 123-130.

Bregman, D.J., Anderson, K.E., Buffler, P., & Salg, J. (1989). Surveillance for work-related adverse reproductive outcomes. Amercian Journal of Public Health, 79(Suppl), 53-57.

Brent, N.J. (1990). Confidentiality and HIV status: Accidental exposure to patient blood or bodily fluids. Home Healthcare Nurse, 8(4), 5-6.

Brink, P.J. (1989). Exploratory designs. In P.J. Brink & M.J. Wood. (Eds.), Advanced design in nursing research (pp. 141-160). London: Sage Publications.

Brink, P.J., & Wood, M.J. (1989). Descriptive designs. In P.J. Brink & M.J. Wood. (Eds.), Advanced design in nursing research (pp. 123-140). London: Sage Publications.

Briscoe, M.E. (1990). Indoor air pollution: Are employees sick from their work? AAOHN Journal, 38(8), 375-380.

Brown, M.L. (1981). Occupational health nursing - Principles and practices. New York: Springer Publishing Co.

Buck, C. (1985). Beyond Lalonde - Creating health. Canadian Journal of Public Health, 76(Suppl 1), 19-24.

Buckley, W. (1967). Sociology and modern systems theory. Englewood Cliffs, N.J.: Prentice-Hall.

Burawoy, M. (1979). Manufacturing consent: Changes in the labour process under monopoly capitalism. Chicago: University of Chicago Press.

Burdine, J.N., McLeroy, K.B., & Gottlieb, N.H. (1987). Ethical dilemmas in health promotion: An introduction. Health Education Quarterly, 14(1), 7-9.

Burrell, G., & Morgan, G. (1979). Sociological paradigms and organizational analysis. London: Heinemann.

Butter, I.H., Carpenter, E.S., Kay, B.J., & Simmons, R.S. (1987). Gender hierarchies in the health labor force. International Journal of Health Services, 17(1), 133-149.

Calder, B.J. (1977). Focus groups and the nature of qualitative marketing research. Journal of Marketing Research, 14, 353-364.

Calgary Health Services. (1990). Annual report 1990. Calgary: Author.

Calhoun, C., & Scott, W.R. (1990). Introduction: Peter Blau's sociological structuralism. In C. Calhoun, M.W. Meyer, & W.R. Scott (Eds.), *Structures of power and constraint: Papers in honour of Peter M. Blau* (pp. 1-36). Cambridge: Cambridge University Press.

Cameron, K.S., & Whetten, D.A. (1981). Perceptions of organizational effectiveness over organizational life cycles. *Administrative Science Quarterly*, *26*(4), 525-544.

Cameron, K.S., & Whetten, D.A. (1983a). Organizational effectiveness: One model or several? In K.S. Cameron & D.A. Whetten (Eds.), *Organizational effectiveness: A comparison of multiple models* (pp. 1-24). New York: Academic Press, Inc.

Cameron, K.S., & Whetten, D.A. (1983b). Some conclusions about organizational effectiveness. In K.S. Cameron & D.A. Whetten (Eds.), *Organizational effectiveness: A comparison of multiple models* (pp. 261-277). New York: Academic Press, Inc.

Canada Safety Council & Canadian Advisory Council on the Status of Women (undated): *Effects of physical and chemical hazards on the reproductive health of male and female workers*. Data sheet: Occupational safety and health. No. J-1.

Canadian Public Health Association. (1990). *Community health-Public health nursing in Canada: Preparation & practice*. Ottawa: Author.

Carroll, J.D. (1978). Comments. *The American Sociologist*, *13*(3), 155-156.

Carter-deCarteret, J. (1987). Needlestick injuries: an occupational health hazard for nurses. *AAOHN Journal*, *35*(3), 119-123.

Casella, E. (1989, October 10). A new labor - Queen's Park fight? *The Spectator*, p. A7.

Cassell, J. (1978). Risk and benefit to subjects of fieldwork. *The American Sociologist*, *13*(3), 134-143.

Castillo-Salgado, C. (1987). Promotion of health in the workplace: The relative worth of lifestyle and environmental approaches. In H.D. Schwartz (Ed.), *Dominant issues in medical sociology* (2nd ed., pp. 709-721). New York: Random House.

Celentano, D.D., & Johnson, J.V. (1987). Stress in health care workers. *Occupational Medicine: State of the Art Reviews*, *2*(3), 593-608.

Centers for Disease Control (1989). Guidelines for prevention of transmission of human immunodeficiency virus and hepatitis B virus to health-care and public safety workers. *MMWR*, *38*, 1-37.

Charbonneau, L. (1982). The VDT controversy. Canadian Nurse, 78(10), 30-32.

Chavkin, W. (1984). Introduction. In W. Chavkin (Ed.), Double exposure: Women's health hazards on the job and at home (pp. 1-11). New York: Monthly Review Press.

Chenier, N.M. (1982). Reproductive hazards at work. Ottawa: Canadian Advisory Council on the Status of Women.

Cinelli, B., & Glover, E.D. (1988). Nurses' smoking in the workplace: Causes and solutions. Journal of Community Health Nursing, 5(4), 255-261.

Clarke, H.F., Beddome, G., & Whyte, N.B. (1990). Vision for tomorrow: A public health nurse driven future for public health nursing. Vancouver: Registered Nurses Association of British Columbia.

Clarke, J.N. (1990). Health, illness, and medicine in Canada. Toronto: McClelland & Stewart Inc.

Clegg, S.R. (1989). Frameworks of power. London: Sage Publications.

Clement, M., & Grotemeyer, H.W. (1990). The iterative positioning process: An international approach from the pharmaceutical industry. Marketing & Research Today, 18(2), 85-96.

Cluff, S. (1986). Health hazards of video display terminals. Modern Medicine of Canada, 41(6), 501-509, 534.

Cohen, I., & Lachman, R. (1988). The generality of the strategic contingencies approach to sub-unit power. Organization Studies, 9(3), 371-391.

Cohen, J.H. (1990). Community nurse executives' psychologic well-being: Relationships among stressors, social support, coping, and optimism. Public Health Nursing, 7(4), 194-203.

Cohen, M., & White, M. (1986). Playing with our health: Hazards in the automated office. Vancouver: Press Gang Printers and Publishers Limited.

Cohen, M., & White, M. (1987). Taking control of our future: Clerical workers and new technology. Vancouver: Press Gang Printers and Publishers Limited.

Coleman, L., & Dickinson, C. (1984). The risks of healing: The hazards of the nursing profession. In W. Chavkin (Ed.), Double exposure: Women's health hazards on the job and at home (pp. 37-56). New York: Monthly Review Press.

Collins, R. (1988). Theoretical sociology. Toronto: Harcourt Brace Jovanovich, Publishers.

Conger, J.A., & Kanungo, R.N. (1988). The empowerment process: Integrating theory and practice. Academy of Management Review, 13(3), 471-482.

Connolly, T., Conlon, E.J., & Deutsch, S.J. (1980). Organizational effectiveness: A multiple constituency approach. Academy of Management Review, 5(2), 211-217.

Conrad, P. (1987). Wellness in the workplace: Potentials and pitfalls of work-site health promotion. Milbank Quarterly, 65(2), 255-275.

Conrad, P. (1988). Worksite health promotion: The social context. Social Science and Medicine, 26(5), 485-489.

Cooper, C.L. (1987a). Stress-prone behaviour: Type A pattern. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), Psychosocial factors at work and their relation to health (pp. 134-139). Geneva: World Health Organization.

Cooper, C.L. (1987b). Stress reactions in white- and blue-collar workers. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), Psychosocial factors at work and their relation to health (pp. 92-96). Geneva: World Health Organization.

Corbet, K., & Reesal, M.R. (1986). The effects of vibrating tools on the hand and arm. Alberta Occupational Medicine Newsletter, 4(4), 24-25.

Corbin, J. (1986). Qualitative data analysis for grounded theory. In W. C. Chenitz & J. M. Swanson (Eds.), From practice to grounded theory: Qualitative research in nursing (pp. 91-101). Don Mills, Ont.: Addison-Wesley Publishing Company.

Coser, L.A. (1977). Masters of sociological thought: Ideas in historical and social context (2nd ed.). Toronto: Harcourt Brace Jovanovich Publishers.

Coye, M.J., & Rosenstock, L. (1983). The occupational health history in a family practice setting. American Family Physician, 28(5), 229-234.

Crawford, C. (1990). The unsafe workplace. Health Law in Canada, 11(2), 38-40.

Crawford, J. (1991). Sick building syndrome: Ill-health in modern building. At The Centre, 13, 23-24.

Cronin-Stubbs, D., & Velsor-Friedrich, B. (1981). Professional and personal stress: A survey. Nursing Leadership, 4(1), 19-26.

Crull, P. (1984). Sexual harassment and women's health. In W. Chavkin (Ed.), Double exposure: Women's health hazards on the job and at home (pp. 100-120). New York: Monthly Review Press.

Cunningham, L.F., & Frontczak, N.T. (1987/88). Improving patient satisfaction in health care clinics through the use of a focus group approach. Health Marketing Quarterly, 5(1,2), 89-116.

Cunningham, M. (1986). Chronic occupational lead exposure. AAOHN Journal, 34(6), 277-279.

Daft, R.L. (1989). Organizational theory and design (3rd. ed.). New York: West Publishing Company.

Daft, R.L., & Steers, R.M. (1986). Organizations: A micro/macro approach. London: Scott, Foresman and Company.

Daniels, A.K. (1975). Feminist perspectives in sociological research. In M. Millman & R.M. Kanter (Eds.), Another voice: Feminist perspectives on social life and social science (pp. 340-380). Garden City, New York: Anchor Books.

Davis, H. (1987). Workplace homicides of Texas males. American Journal of Public Health, 77(10), 1290-1293.

Davison, D. (1987). Burnt out cases?...occupational stress in health visitors in an inner city. Health Visitor, 60(2), 51.

Dawson, L. (1987). Occupational health nursing program. Occupational Health & Safety Magazine, 10(3), 17.

Death toll tops 1987 statistics. (1988, October 28). Calgary Herald, p. A15.

DeMatteo, B. (1985). Terminal shock: The health hazards of video display terminals. Toronto: NC Press Limited.

Demers, R., & Wall, S.J. (1983). Occupational history-taking in a family practice academic setting. Journal of Medical Education, 58(3), 151-153.

Denison, D.R. (1990). Corporate culture and organizational effectiveness. Toronto: John Wiley & Sons.

Denzin, N.K. (1978). Sociological methods: A sourcebook (2nd ed.). Toronto: McGraw-Hill Book Company.

Derksen, L.A. (1990). Linking environmental attitudes and behaviour: The social context of recycling in Alberta. Unpublished master's thesis, University of Alberta, Edmonton.

Desrosiers, J., Torres-Moreno, R., & Smith, T. (1987). Man and machine in harmony: How to detect ergonomic hazards in the workplace. Occupational Health & Safety Canada, 3(1), 48-54, 78.

Digby, C., & Riddell, W.C. (1986). Occupational health and safety in Canada. In W.C. Riddell (Res. Coord.), Canadian labour relations (Vol. 16, pp. 285-320). Toronto: University of Toronto Press.

Dignan, M., Michielutte, R., Sharp, P., Bahnson, J., Young, L., & Beal, P. (1990). The role of focus groups in health education for cervical cancer among minority women. Journal of Community Health, 15(6), 369-375.

Dimaggio, P. (1983). State expansion and organizational fields. In R.H. Hall & R.E. Quinn (Eds.), Organizational theory and public policy (pp. 147-161). London: Sage Publications.

Dingwall, R. (1984). Aggression management: Who is to blame anyway? . . . Community nursing Part 2. Nursing Times, 80(15), 42-43.

Donoghue, S.L. (1983). Dealing with the video display terminal. Canadian Journal of Public Health, 74, 179-182.

Doucette, S. (1989). The changing role of nurses: The perspective of Medical Services Branch. Canadian Journal of Public Health, 80(2), 92-94.

Draper, E. (1986). High-risk workers or high-risk work: Genetic susceptibility policies in the hazardous workplace. International Journal of Sociology and Social Policy, 6(4), 12-28.

Duffy, M.E. (1985). Designing nursing research: The qualitative-quantitative debate. Journal of Advanced Nursing, 10, 225-232.

Duffy, M.E. (1987). Methodological triangulation: A vehicle for merging quantitative and qualitative research methods. Image: Journal of Nursing Scholarship, 19(3), 130-133.

Dwyer, T. (1991). Life and death at work. New York: Plenum Publishing Corporation.

Ebert, B., & MacAlister, M. (1970). A study of the activities of nursing personnel in ten health units and one city health department in the Province of Alberta, 1968. Canadian Journal of Public Health, 61, 126-131.

Edmonton Board of Health. (1990). Annual report 1990. Edmonton: Author.

Edwards, C. (1992). Ergonomics: More than a word for the '90s. Occupational Health & Safety Magazine, 14(3), 7-8, 13-15.

Edwards, R. (1979). Contested terrain: The transformation of the workplace in the twentieth century. New York: Basic Books, Inc.

Electrical contacts: The statistics. (1987). Occupational Health & Safety Magazine, 10(2), 8.

Elie, J. (1988). All the right moves. Occupational Health & Safety Canada, 4(2), 46-52, 104.

Elling, R.H. (1989). The political economy of workers' health and safety. Social Science and Medicine, 28(11), 1171-1182.

Elmslie, K., & O'Shaughnessy, M.V. (1988). National surveillance program on occupational exposure to the human immunodeficiency virus among health care workers in Canada. Canadian Medical Association Journal, 138, 31-33.

Elmslie, K.D., Mulligan, L., & O'Shaughnessy, M.V. (1989). Occupational exposure to the human immunodeficiency virus among health care workers in Canada. Canadian Medical Association Journal, 140, 503-505.

Emerson, R.M. (1962). Power-dependence relations. American Sociological Review, 27(1), 31-41.

Emery, F. (1985). Public policies for healthy workplaces. Human Relations, 38(11), 1013-1022.

Emmett, E.A., & Baetz, J.H. (1987). Health in the health care industries. Occupational Medicine: State of the Art Reviews, 2(3), ix - xv.

Epp, J. (1986). Achieving health for all: A framework for health promotion. Ottawa: National Health and Welfare Canada.

Epstein, C.F. (1988). Deceptive distinctions: Sex, gender, and the social order. New York: Yale University Press and Russell Sage Foundation.

Epstein, S.S. (1990). Losing the war against cancer: Who's to blame and what to do about it. International Journal of Health Services, 20(1), 53-71.

Estryn-Behar, M., Kaminski, M., Peigne, E., Bonnet, N., Valchere, E., Gozian, C., Azoulay, S., & Giorgi, M. (1990). Stress at work and mental health status among female hospital workers. British Journal of Industrial Medicine, 47(1), 20-28.

Feagin, J.R. (1986). Social problems: A critical power-conflict perspective (2nd ed.). Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Feagin, R., & Alford, R.L. (1990). Public health nursing: Cross-training in core services. Public Health Nursing, 7(1), 52-57.

Federal-Provincial Advisory Committee on Environmental and Occupational Health. (undated, presumed 1985). The pregnant worker - A resource document for health professionals. Ottawa: Environmental Health Directorate.

Feldberg, R.L., & Glenn, E.N. (1979). Male and female: Job versus gender models in the sociology of work. Social Problems, 26(5), 524-538.

Felton, J.S. (1980). The occupational history: A neglected area in the clinical history. Journal of Family Practice, 11(1), 33-39.

Fern, E.F. (1982). The use of focus groups for idea generation: The effects of group size, acquaintanceship, and moderator on response quantity and quality. Journal of Marketing Research, 19, 1-13.

Field, P.A. (1980). An ethnography: Four nurses' perspectives of nursing in a community health setting. Unpublished PhD Dissertation, University of Alberta, Edmonton.

Field P.A., & Morse, J.M. (1985). Nursing research: The application of qualitative approaches. Rockville, Maryland: Aspen Systems Corporation.

Fielding, J.E. (1984). Health promotion and disease prevention at the worksite. Annual Review of Public Health, 5, 237-265.

Fielding, J.E. (1989). Work site stress management: National survey results. Journal of Occupational Medicine, 31(12), 990-995.

Find alternatives to Rec. 12, trustees told: Minister promotes regionalization not imposed boundaries. HospitAlta, 30(2), 3-4.

Firms finding safety savings. (1988, October 28). Calgary Herald, p. A15.

Fleming, D.O. (1987). Hazard control of infectious agents. Occupational Medicine: State of the Art Reviews, 2(3), 499-511.

Francescutti, L.H., Saunders, L.D., & Hamilton, S.M. (1991). Why are there so many injuries? Why aren't we stopping them? Canadian Medical Association Journal, 144(1), 57-61.

Frankenhaeuser, M. (1981). Coping with stress at work. International Journal of Health Services, 11(4), 491-510.

Friedland, G. (1990). Risk of transmission of HIV to home care and health care workers. Journal of the Academy of Dermatology, 22(6), 1171-1174.

Friedlander, F., & Pickle, H. (1968). Components of effectiveness in small organizations. Administrative Science Quarterly, 13(2), 289-304.

Froines, J., Wegman, D., & Eisen, E. (1989). Hazard surveillance in occupational disease. American Journal of Public Health, 79(Suppl), 26-31.

Froines, J.R., Dellenbaugh, C.A., & Wegman, D.H. (1986). Occupational health surveillance: A means to identify work-related risks. American Journal of Public Health, 76(9), 1089-1096.

Fulton, J.P., Bodenheimer, H.C.Jr., & Kramer, P.D. (1986). Acceptance of hepatitis B vaccine among hospital workers: A follow-up. American Journal of Public Health, 1339-1340.

Gardell, B. (1982). Scandinavian research on stress in working life. International Journal of Health Services, 12(1), 31-41.

Garnsey, E. (1982). Women's work and theories of class and stratification. In A. Giddens & D. Held (Eds.), Classes, power, and conflict (pp. 425-445). Berkeley: University of California Press.

Gartner, A., & Riessman, F. (1974). The service society and the consumer vanguard. London: Harper & Row, Publishers.

Gehrt, K.C., & Pinto, M.B. (1990). An exploration of the applicability of situational segmentation in the health care market: Development of a situational taxonomy. Health Marketing Quarterly, 7(1,2), 115-130).

Gephart, R.P.Jr. (1987). Organization design for hazardous chemical accidents. Columbia Journal of World Business, 22(1), 51-58.

Gephart, R.P.Jr. (1988). Managing the meaning of a sour gas well blowout: The public culture of organizational disasters. Industrial Crisis Quarterly, 2, 17-32.

Gephart, R.P.Jr. (1989). Organizational structure and the management of petrochemical accidents: A case comparative study. Paper accepted for presentation at the 2nd International Conference on Industrial and Organizational Crisis Management, New York, November 3, 1989.

Gerth, H.H., & Mills, C.W. (Trans. & Eds.). (1946). From Max Weber: Essays in sociology. New York: Oxford University Press.

Gestal, J.J. (1987). Occupational hazards in hospitals: Accidents, radiation, exposure to noxious chemicals, drug addiction and psychic problems, and assault. British Journal of Industrial Medicine, 44, 510-520.

Giddens, A. (1987). Sociology: A brief but critical introduction (2nd ed.). Toronto: Harcourt Brace Jovanovich, Publishers.

Ginetti, J., & Greig, H.E. (1981). The occupational health history. Nurse Practitioner, 6(11), 12-13.

Glaser, B.G. (1978). Theoretical sensitivity. Mill Valley, California: The Sociology Press.

Glaser, B.G., & Strauss, A. (1967). The discovery of grounded theory. Chicago: Aldine Publishing Company.

Glowinkowski, S.P., & Cooper, C.L. (1986). Organizational issues in stress research. Journal of Managerial Psychology, 1(1), 3-11.

Goldbaum, R. (1981). Occupational disease: The patient as worker. Nurse Practitioner, 6(6), 8-11.

Goffman, E. (1959). The presentation of self in everyday life. New York: Doubleday.

Goldenberg, S. (1987). Thinking sociologically. Belmont, California: Wadsworth Publishing Company.

Goldman, A.E., & McDonald, S.S. (1987). The group depth interview: Principles and practices. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Goldman, R.H., & Peters, J.M. (1981). The occupational and environmental health history. Journal of the American Medical Association, 246(24), 2831-2836.

Goldsmith, J.R. (Ed.). (1986). Environmental epidemiology: Epidemiological investigation of community environmental health problems. Boca Raton, Florida: CRC Press, Inc.

Goldstein, L., & Johnson, S. (1991). OSHA bloodborne pathogens standard: Implications for the occupational health nurse. AAOHN Journal, 39(4), 182-187.

Goodwin, S. (1983). Caring for the carers: Coping with stress part 2. Health Visitor, 56(2), 46-48.

Goodwin, S. (1987). Stress in health visiting. Recent Advances in Nursing, 15, 99-111.

Gordon, A.G. (1989). Task force report on accident prevention. Edmonton: Alberta Chamber of Resources.

Gordon, W., & Langmaid, R. (1988). Qualitative market research: A practitioner's and buyer's guide. Brookfield, Vermont, USA: Gower.

Graham, P. (1992). Canadian Council for Occupational Health Nurses Incorporated. Report to the Annual General Meeting of the Alberta Occupational Health Nurses Association, Calgary, Alberta.

Green, J.L., & Driggers, B. (1989). All visiting nurses are not alike: Home health and community health nursing. Journal of Community Health Nursing, 6(2), 83-93.

Green, K.L. (1988). Issues of control and responsibility in workers' health. Health Education Quarterly, 15(4), 473-486.

Green, L.W., & Kreuter, M.W. (1990). Health promotion as a public health strategy for the 1990s. Annual Review of Public Health, 11, 319-334.

Greene, D. (1990). Developing specific policies for the ambulatory setting. Oncology Nursing Forum, 17(1), 114.

Griew, S. (1985). Work and health: The changing context and changing roles. Canadian Journal of Public Health, 76(Suppl 1), 51-55.

Grueninger, S. (1986). The illiteracy crisis. AAOHN Journal, 34(9), 429-431.

Grunberg, L. (1983). The effects of the social relations of production on productivity and workers' safety: An ignored set of relationships. International Journal of Health Services, 13(4), 621-634.

Grunberg, L. (1986). Power relations, productivity, and safety: An empirical inquiry; Les rapports de pouvoir, la productivite et la securite: Une enquete en pirique. Sociologie et Societes, 18(2), 11-23.

Guarasci, R. (1986). OSHA: Cotton dust and theories of the state. Humanity and Society, 10(2), 145-161.

Guidotti, T.L. (1987a). Occupational health for hospital workers. American Family Physician, 35(2), 137-142.

Guidotti, T.L. (1987b). Hospital occupational health: Time for a new point of view. Canadian Medical Association Journal, 136, 161-162.

Guidotti, T.L., Cortez, J.H., Abraham, H.L., Hughson, W., Krems, A.D., Newman, T.S., Bryson, A.L., & Heramb, B.I. (1983). Taking the occupational history. Annals of Internal Medicine, 99(5), 641-651.

Guidotti, T.L., & Cottle, M.K.W. (1987). Occupational health problems among transit workers. Public Health Reviews, 15, 29-44.

Guidotti, T.L., & Goldsmith, D.F. (1986). Occupational cancer. American Family Physician, 34(3), 146-152.

Gummer, B. (1985). The quality of whose working life? Administration in Social Work, 9(3), 93-106.

Gumpel, J.M., & Mason, A.M.S. (1974). Self-administered clinical questionnaire for outpatients. British Medical Journal, 2, 209-212.

Haché-Faulkner, N., & MacKay, R.C. (1985). Stress in the workplace: Public health and hospital nurses. Canadian Nurse, 81(4), 40-42.

Hadley, M. (1990). Background paper regarding abuse of nurses in the workplace. AARN Newsletter, 46(9), 6-9.

Hadziolova, I. (1987). Age and gender in relation to stress at work. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), Psychosocial factors at work and their relation to health (pp. 140-149). Geneva: World Health Organization.

Haldane, E.V., van Rooyen, C.E., Embil, J.A., Tupper, W.C., Gordon, P.C., & Wanklin, J.M. (1969). A search for transmissible birth defects of virologic origin in members of the nursing profession. American Journal of Obstetrics and Gynecology, 105(12), 1032-1040.

Hale, A.R. (1990). Safety rules O.K.? Possibilities and limitations in behavioural safety strategies. Journal of Occupational Accidents, 12(1), 3-20.

Hales, T., Seligman, P.J., Newman, S.C., & Timbrook, C.L. (1988). Occupational injuries due to violence. Journal of Occupational Medicine, 30(6), 483-487.

Hall, R. (1972). Organizations: Structure and process. Englewood Cliffs, N.J.: Prentice-Hall.

Hall, R.H. (1986). Dimensions of work. London: Sage Publications.

Hall, R.H., & R.E. Quinn. (1983). Question: Is there a connection between organizational theory and public policy? In R.H. Hall & R.E. Quinn (Eds.), Organizational theory and public policy (pp. 7-22). London: Sage Publications.

Hancock, T. (1985). Beyond health care: From public health policy to healthy public policy. Canadian Journal of Public Health, 76(Suppl 1), 9-11.

Handy, J.A. (1991). The social context of occupational stress in a caring profession. Social Science and Medicine, 32(7), 819-830.

Haney, P.E., Raymond, B.A., & Lewis, L.C. (1990). Ethylene oxide: An occupational health hazard for hospital workers. AORN Journal, 51(2), 480-481, 483, 485-486.

Hannan, M.T., & Freeman, J. (1977). The population ecology of organizations. *American Journal of Sociology*, *82*, 929-964.

Hannan, M.T., & Freeman, J.H. (1983). Internal politics of growth and decline. In M.W. Meyer, & Associates, *Environments and organizations* (pp. 177-199). London: Jossey-Bass Publishers.

Hanrahan, L.P., & Moll, M.B. (1989). Injury surveillance. *American Journal of Public Health*, *79*(Suppl), 38-45.

Harber, P., Billet, E., Vojtecky, M., Rosenthal, E., Shimozaki, S., & Horan, M. (1988). Nurses' belief about cause and prevention of occupational back pain. *Journal of Occupational Medicine*, *30*(10), 797-800.

Harper, C.L., & Smith, D.S. (1979). Point/Counterpoint: Declining public health organizations - Will management make a difference? *Health Care Management Review*, *4*(4), 31-43.

Harris, L.J. (1986). Quality assurance: A safe working environment for hospital nurses. *AAOHN Journal*, *34*(5), 237-238.

Hart, K.E. (1987). Managing stress in occupational settings: A selective review of current research and theory. *Journal of Managerial Psychology*, *2*(1), 11-17.

Hartmann, H. (1982). Capitalism, patriarchy, and job segregation by sex. In A. Giddens & D. Held (Eds.), *Classes, power, and conflict* (pp. 446-469). Berkeley: University of California Press.

Harvey, M.D. (1985). *Models for accident investigation*. Edmonton: Occupational Health and Safety Division, Alberta Workers' Health, Safety and Compensation.

Hatch, M., & Stein, Z.A. (1986). Agents in the workplace and effects on reproduction. *Occupational Medicine: State of the Art Reviews*, *1*(3), 531-534.

Haw, M.A. (1982). Women, work and stress: A review and agenda for the future. *Journal of Health and Social Behaviour*, *23*(2), 132-144.

Hayden, D.C. (1990). Infection control in public health: A new perspective. *American Journal of Infection Control*, *18*(1), 47-49.

Health and Welfare Canada. (1990). *A guide for health promotion by health care facilities*. Ottawa: Minister of Supply and Services.

Helmkamp, J.C., Talbott, E.O., & Marsh, G.M. (1984). Whole body vibration - A critical review. *American Industrial Hygiene Association Journal*, *45*(3), 162-167.

Hemminki, K.P., Kyyrononen, P., & Lindbohm, M.L. (1985). Spontaneous abortions and malformations in the offspring of nurses exposed to anaesthetic gases, cytostatic drugs and other potential hazards in hospitals based on registered information of outcome. *Journal of Epidemiology and Community Health*, *39*, 141-147.

Henderson, N.R. (1990). Focus groups for the last decade of the twentieth century. *Applied Marketing Research*, *30*(2), 20-23.

Herd, J.A. (1988). Physiological indices of job stress. In J.J. Hurrell Jr., L.R. Murphy, S.L. Sauter, & C.L. Cooper (Eds.), *Occupational stress: Issues and developments in research* (pp. 124-154). New York: Taylor & Francis.

Hickson, D.J., Hinings, C.R., Lee, C.A., Schneck, R.E., & Pennings, J.M. (1971). A strategic contingencies' theory of intraorganizational power. *Administrative Science Quarterly*, *16*(2), 216-229.

Hinings, C.R., Hickson, D.J., Pennings, J.M., & Schneck, R.E. (1974). Structural conditions of intraorganizational power. *Administrative Science Quarterly*, *19*, 22-44.

Hinkin, T.R., & Schriesheim, C.A. (1988). Power and influence: The view from below. *Personnel*, *65*(5), 47-50.

Hipwell, A.E., Tyler, P.A., & Wilson, C.M. (1989). Sources of stress and dissatisfaction among nurses in four hospital environments. *British Journal of Medical Psychology*, *621*, 71-79.

Hoffmann, K.K., Weber, D.J., & Rutala, W.A. (1991). Infection control strategies relevant to employee health. *AAOHN Journal*, *39*(4), 167-181.

Hogue, C.J.R. (1986). Study designs appropriate for the workplace. *Occupational Medicine: State of the Art Reviews*, *1*(3), 457-471.

Hoskin, P.L.A. (1987). *The health of nurses: Their subjective well-being, lifestyle/preventive practices and goals for health*. Unpublished master's thesis, University of Lethbridge.

House, J.S. (1980). *Occupational stress and the mental and physical health of factory workers* (Research Report Series). Ann Arbour: The University of Michigan, Institute for Social Research, Survey Research Center.

House, J.S., & Jackman, M.F. (1979). Occupational stress and health. In P.I. Ahmed & G.V. Coelho (Eds.), *Toward a new definition of health: Psychosocial dimensions* (pp. 135-157). New York: Plenum Press.

Hunter, C. (1991). Current issues in occupational health nursing: A Canadian perspective. *AAOHN Journal*, *39*(7), 313-315.

Hutchinson, S. (1986). Grounded theory: The method. In P.L. Munhall, & C.J. Oiler (Eds.), Nursing research: A qualitative perspective (pp. 111-130). Norwalk, Conn.: Appleton-Century-Crofts.

H_2S update. (1987). Occupational Health & Safety Magazine, 9(4), 13.

In Memoriam (1986). Occupational Health & Safety Magazine, 9(2), 18.

In Memoriam (1989). Occupational Health & Safety Magazine, 13(2), 18.

International Council of Nurses (1988). Health in the workplace. Geneva: Author.

International Council of Nurses (1989). Nurses: Health and Safety. Geneva: Author.

Isocyanate update. (1986). Occupational Health & Safety Magazine, 9(2), 3.

Israel, B.A., Schurman, S.J., & House, J.S. (1989). Action research on occupational stress: Involving workers as researchers. International Journal of Health Services, 19(1), 135-155.

Izmerov, N.F., & Kundiev, J.I. (1986). Nature and health effects of occupational factors. In M. Karvonen & M.I. Mikheev (Eds.), Epidemiology of occupational health (pp. 17-42). Copenhagen: World Health Organization Regional Office for Europe.

Jackson, L.C. (1991). Ergonomics and the occupational health nurse. AAOHN Journal, 39(3), 119-127.

James, C. (1987). Occupational injury: Accidental or a reflection of conflict between capital and labour: Australian and New Zealand Journal of Sociology, 23(1), 47-64.

Janssens, L., Grotenhuis, H., Michiels, H., & Verhaegen, P. (1989). Social organizational determinants of safety in nuclear power plants: Operator training in the management of unforeseen events. Journal of Occupational Accidents, 11(2), 121-129.

Jefferys, M. (1991). Medical sociology and public health: Interdisciplinary relationships 1950-90. Public Health, 105, 15-21.

Jenish, D. (1990, August 13). Unhealthy buildings: Experts say indoor air can make people ill. MacLean's, p. 56.

Jick, T.D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. Administrative Science Quarterly, 24, 602-611.

Johnson, B.C. (1990). Focus group positioning and analysis: A commentary on adjuncts for enhancing the design of health care research. Health Marketing Quarterly, 7(1,2), 153-168.

Johnson, J.V. (1989). Collective control: Strategies for survival in the workplace. International Journal of Health Services, 19(3), 469-480.

Johnson, J.V., & Hall, E.M. (1988). Job strain, workplace social support, and cardiovascular disease: A cross-sectional study of a random sample of the Swedish working population. American Journal of Public Health, 78(10), 1336-1342.

Johnson, T. (1980). Work and power. In G. Esland, & G. Salaman (Eds.), The politics of work and occupations (pp. 335-373). Toronto: University of Toronto Press.

Kanter, R.M. (1975). Women and the structure of organizations: Explorations in theory and behavior. In M. Millman & R.M. Kanter (Eds.), Another voice: Feminist perspectives on social life and social science (pp. 34-74). Garden City, New York: Anchor Books.

Kanter, R.M. (1977). Men and women of the corporation. New York: Basic Books, Inc.

Karasek, R.A. (1979). Job demands, job decision latitude and mental strain: Implications for job redesign. Administrative Science Quarterly, 24, 285-308.

Karasek, R. (1990). Lower health risk with increased job control among white collar workers. Journal of Organizational Behaviour, 11(3), 171-185.

Karasek, R., & Theorell, T. (1990). Healthy work: Stress, productivity, and the reconstruction of working life. New York: Basic Books, Inc., Publishers.

Karasek, R.A., Theorell, T., Schwartz, J.E., Schnall, P.L., Pieper, C.F., & Michela, J.L. (1988). Job characteristics in relation to the prevalence of myocardial infarction in the US Health Examination Survey (HES) and the Health and Nutrition Examination Survey (HANES). American Journal of Public Health, 78(8), 910-918.

Kaufman, D.R. (1989). Professional women: How real are the recent gains? In J. Freeman (Ed.), Women: A feminist perspective (pp. 329-346). Mountain View, California: Mayfield Publishing Company.

Kenter, P. (1987). The three RRR's: Reading, risk and responsibility. Occupational Health & Safety Canada, 3(4), 25-30, 66.

Key, M.M. (1985). State and local health departments. Journal of Occupational Medicine, 27(5), 379-385.

Keys, A., Sever, P., Hewitt, J., & Gitwick, H. (1972). Hepatitis antigen in mothers and infants. Journal of Pediatrics, 80, 650-658.

Keyserling, W.M., & Chaffin, D.B. (1986). Occupational ergonomics - Methods to evaluate physical stress on the job. Annual Review of Public Health, 7, 77-104.

Kimberly, J.R. (1987). The study of organization: Toward a biographical perspective. In J.W. Lorsch (Ed.), Handbook of organizational behaviour (pp. 223-237). Englewood Cliffs, N.J.: Prentice Hall, Inc.

King, J. (1984). VDT: How to prevent 'terminal illness'. Medical Self-Care, 24, 27-31, 48.

Kinlaw, D.C. (1988). What employees "see" is what organizations "get". Management Solutions, 33(3), 38-42.

Klitzman, S., House, J.S., Israel, B.A., & Mero, R.P. (1990). Work stress, nonwork stress, and health. Journal of Behavioural Medicine, 13(3), 221-243.

Knafl, K.A., & Breitmeyer, B.J. (1991). Triangulation in qualitative research: Issues of conceptual clarity and purpose. In J.M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 226-239). London: Sage Publications.

Knafl, K.A., & Howard, M.J. (1986). Interpreting, reporting, and evaluating qualitative research. In P.L. Munhall & C.J. Oiler (Eds.), Nursing research: A qualitative perspective (pp. 265-278). Norwalk, Conn.: Appleton-Century-Crofts.

Knafl, K.A., & Webster, D.C. (1988). Managing and analyzing qualitative data: A description of tasks, techniques, and materials. Western Journal of Nursing Research, 10(2), 195-218.

Knodel, J., Chamratrithirong, A., & Debavalya, N. (1987). Thailand's reproductive revolution: Rapid fertility decline in a third-world setting. Madison, Wisconsin: The University of Wisconsin Press.

Knox, S.S., Theorell, T., Svensson, J.C., & Waller, D. (1985). The relation of social support and working environment to medical variables associated with elevated blood pressure in young males: A structural model. Social Science and Medicine, 21(5), 525-531.

Krackhardt, D. (1990). Assessing the political landscape: Structure, cognition, and power in organizations. Administrative Science Quarterly, 35, 342-369.

Krahn, H. (1992). Quality of work in the service sector. Ottawa: Statistics Canada.

Kraus, J.F. (1987). Homicide while at work: Person, industries, and occupations at high risk. American Journal of Public Health, 77(10), 1285-1289.

Krause, E.A. (1977). Power and illness: The political sociology of health and medical care. New York: Elsevier.

Kreiger, N. (1990). On becoming a public health professional: Reflections on democracy, leadership, and accountability. Journal of Public Health Policy, 11(4), 412-419.

Krisberg, B. (1978). The sociological imagination revisited. In C.E. Reasons & R.M. Rich (Eds.), The sociology of law: A conflict perspective (pp. 455-470). Toronto: Butterworths.

Krueger, R.A. (1988). Focus groups: A practical guide for applied research. London: Sage Publications.

Ktsanes, V.K., Williams, W.L., & Boudreaux, V.V. (1986). The cumulative risk of tuberculin skin test conversion for five years of hospital employment. American Journal of Public Health, 76(1), 65-67.

Kuhls, T.L., Viker, S., Parris, N.B., Garakian, A., Sullivan-Bolyai, J., & Cherry, J.D. (1987). Occupational risk of HIV, HBV, and HSV-2 infections in health care personnel caring for AIDS patients. American Journal of Public Health, 77(10), 1306-1309.

Kumar, P. (Ed.). (1988). Introduction and Summary. In P. Kumar (Ed.), Industrial relations in the 1980s: Issues and implications (pp. 2-6). Research and Current Issues, Series No. 54. Kingston, Ont.: Industrial Relations Centre Queen's University.

Labonte, R.N. (1989). Pesticides and healthy public policy. Canadian Journal of Public Health, 80(4), 238-242.

Lachman, R. (1989). Power from what? A reexamination of its relationships with structural conditions. Administrative Science Quarterly, 34(2), 231-251.

Laffrey, S.C., Loveland-Cherry, C.J., & Winkler, S.J. (1986). Health behavior: Evolution of two paradigms. Public Health Nursing, 3(2), 92-100.

Lahaye, D., Strauss, P., Baleux, C., & van Ganse, W. (1987, August 22). Cost-benefit analysis of hepatitis-B vaccination. Lancet, 2(8556), 441-443.

Lambright, B. (1985, April 6). Safety, as a rule, falls into firm's hands. The Edmonton Journal, p. H1.

Landrigan, P.J. (1989). Improving the surveillance of occupational disease. American Journal of Public Health, 79(12), 1601-1602.

Landsbergis, P.A. (1988). Occupational stress among health care workers: A test of the job demands - control model. Journal of Organizational Behavior, 9(3), 217-239.

Lawrence, P.R., & Lorsch, J.W. (1967). Organization and environment: Managing differentiation and integration. Boston: Harvard University.

Lazarsfeld, P.F. (1955). Evaluating the effectiveness of advertising by direct interviews. In P.F. Lazarsfeld & M. Rosenberg (Eds.), The language of social research: A reader in the methodology of social research (pp. 411-419). New York: The Free Press.

Lazarus, R.S. (1987). Individual susceptibility and resistance to psychological stress. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), Psychosocial factors at work and their relation to health (pp. 127-139). Geneva: World Health Organization.

Lazarus, R.S., & Folkman, S. (1984). Stress, appraisal, and coping. New York: Springer Publishing Company.

Leads from the MMWR: Recommendations for prevention of HIV transmission in health-care settings. (1987). Journal of the American Medical Association, 258(10), 1293, 1299-1300, 1305.

Lee, S.M., Luthans, F., & Olson, D.L. (1982). A management science approach to contingency models of organizational structure. Academy of Management Journal, 25(3), 553-566.

Lemasters, G.K., & Selevan, S.G. (1984). Use of exposure data in occupational reproductive studies. Scandinavian Journal of Work, Environment and Health, 10, 1-6.

Leppanen, R.A., & Olkinuora, M.A. (1987). Psychological stress experienced by health care personnel. Scandinavian Journal of Work, Environment and Health, 13, 1-8.

Lerner, M.P. (1982). Stress at the workplace. Issues in Radical Therapy, 10(3), 14-16.

Lessor, R. (1984). Occupational health policy: Addressing personal troubles or social problems? Occupational Health Nursing, 32(3), 146-153.

Levi, L. (1989). Occupational stressors, biological stress and workers' health. Sangyo-Ika-Daigaku-Zasshi, 11(2), 229-245. (From Health Plan, 1981 - 5/91, Abstract No. 89368476).

Levi, L. (1990). Occupational stress. Spice of life or kiss of death? American Psychologist, 45(10), 1142-1145.

Levin, H. (1991). What causes indoor air quality problems? At The Centre, 13, 20-23.

Levin, L.S. (1987). Every silver lining has a cloud: The limits of health promotion. Social Policy, 18(1), 57-60.

Lewy, R. (1987). Organization and conduct of a hospital occupational health service. Occupational Medicine: State of the Art Reviews, 2(3), 617-649.

Linder, S.H. (1987). On cogency, professional bias, and public policy: Assessment of four views of the injury problem. Milbank Quarterly, 65(2), 276-301.

Lindstrom, K., & Mantysalo, S. (1987). Physical and chemical factors that increase vulnerability to stress or act as stressors at work. In R. Kalimo, M.A. El-Batawi, & C.L. Cooper (Eds.), Psychosocial factors at work and their relation to health (pp. 112-123). Geneva: World Health Organization.

Lipson, J.G. (1991). The use of self in ethnographic research. In J.M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 73-89). London: Sage Publications.

Liss, G.M., Crimi, C., Jaczek, K.H., Anderson, A., Slattery, B., & D'Cunha, C. (1990). Improper office disposal of needles and other sharps: An occupational hazard outside of health care institutions. Canadian Journal of Public Health, 81(6), 417-420.

Locherty, L., & Ramondt, J. (1988, October 28). Government accused of gambling with lives. Calgary Herald, p. A14.

Lofland, J., & Lofland, L.H. (1984). Analyzing social settings: A guide to qualitative observation and analysis (2nd ed.). Belmont, California: Wadsworth Publishing Company.

Logan, C. (1986). Reproduction and the workplace: An industry perspective. Occupational Medicine: State of the Art Reviews, 1(3), 473-481.

Longest, B.B.Jr. (1990). Interorganizational linkages in the health sector. Health Care Management Review, 15(1), 17-28.

Lowe, G.S. (1989). Women, paid/unpaid work, and stress: New directions for research. Background paper for the Canadian Advisory Council on the Status of Women.

Lowe, G.S. (1990). CUPE staff workload study. Report submitted to the Joint Project Management Committee.

Lowe, G.S., & Northcott, H.C. (1986). Under pressure: A study of job stress. Toronto: Garamond Press.

Lowe, G.S., & Northcott, H.C. (1988). The impact of working conditions, social roles, and personal characteristics on gender differences in distress. Work and Occupations, 15(1), 55-77.

Lucas, M.D., McCreight, L.M., Watkins, J.G., & Long, S.E. (1988). Job satisfaction assessment of public health nurses. Public Health Nursing, 5(4), 230-234.

Luker, K.A., & Chalmers, K.I. (1990). Gaining access to clients: The case of health visiting. Journal of Advanced Nursing, 15, 74-82.

Lynn, M.R. (1986). Determination and quantification of content validity. Nursing Research, 35(6), 382-385.

MacKinnon, B. (1987). Work-related injuries and illnesses: Small employees 1977-1985. Edmonton: Alberta Community and Occupational Health.

MacPherson, K.I. (1983). Feminist methods: A new paradigm for nursing research. Advances in Nursing Science, 5(1), 17-25.

Maguire, T.O., & Hazlett, C.B. (1969). Reliability for the researcher. Alberta Journal of Educational Research, 15(2), 117-126.

Mamelle, N., Laumon, B., & Lazur, P. (1984). Prematurity and occupational activity during pregnancy. American Journal of Epidemiology, 119, 309-322.

Manga, P. (1979). Some interrelationships between occupational stress and occupational health and safety. Journal of Comparative Sociology and Religion, 6-7, 130-154.

March, J.G., & Simon, H.A. (1958). Organizations. New York: John Wiley & Sons, Inc.

Marchak, P. (1985). Canadian political economy. Canadian Review of Sociology & Anthropology, 22(5), 673-699.

Marck, P. (1992). Does the healing hurt? Nurse assault. AARN Newsletter, 48(3), 23-24.

Marha, K. (1983). VLF - Very low frequency fields near VDTs and an example of their removal. Hamilton: Canadian Centre for Occupational Health and Safety.

Marha, K., & Charron, D. (1983). The very low frequency (VLF) emission testing of CCOHS video display terminals. Hamilton: Canadian Centre for Occupational Health and Safety.

Marha, K., Spinner, B., & Purdham, J. (1983). The case for concern about very low frequency fields from visual display terminals: The need for further research and shielding of VDTs. Hamilton: Canadian Centre for Occupational Health and Safety.

Markham, J., & Fisher, L.A. (1987). Teaching occupational health to medical undergraduates. Canadian Medical Association Journal, 137, 602.

Marmot, M., & Theorell, T. (1990). Social class and cardiovascular disease: The contribution of work. In P. Conrad & R. Kern (Eds.), The sociology of health and illness: Critical perspectives (3rd. ed., pp. 95-107). New York: St. Martin's Press.

Marshall, C., & Rossman, G.B. (1989). Designing qualitative research. London: Sage Publications.

Martin, E. (1983). Surveys as social indicators: Problems in monitoring trends. In P.H. Rossi, J.D. Wright, & A.B. Anderson (Eds.), Handbook of Survey Research (pp. 677-743). Toronto: Academic Press, Inc.

Mattila, M.K. (1985). Job load and hazard analysis: A method for the analysis of workplace conditions for occupational health care. British Journal of Industrial Medicine, 42, 656-666.

Matuk, L.C.K.Y., & Horsburgh, M.E.C. (1989). Rebuilding public health nursing practice: A Canadian perspective. Public Health Nursing, 6(4), 169-173.

Mauskopf, J.A., Bradley, C.J., & French, M.T. (1991). Benefit-cost analysis of hepatitis B vaccine programs for occupationally-exposed workers. Journal of Occupational Medicine, 33(6), 691-698.

May, K.A. (1991). Interview techniques in qualitative research: Concerns and challenges. In J.M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 188-201). London: Sage Publications.

McAlister, N.H. (1987). Video display terminals and operator morbidity. Canadian Journal of Public Health, 78, 62-65.

McCracken, G. (1988). The long interview. Beverly Hills: Sage Publications.

McDaniel, S.A. (1987). Women, work and health: some challenges to health promotion. Canadian Journal of Public Health, 78, S9-S13.

McDiarmid, M.A. (1990). Medical surveillance for antineoplastic-drug handlers. American Journal of Hospital Pharmacy, 47(5), 1061-1066.

McGuinness, S. (1992). Nurse abuse: Inhumanity tolerated. AARN Newsletter, 48(4), 17-19.

McKee, J. (1988). Holistic health and the critique of Western medicine. Social Science and Medicine, 26(8), 775-784.

McLaren, A.T. (1988). Gender and society: Creating a Canadian women's sociology. Toronto: Copp Clark Pitman Ltd.

McLeroy, K.R., Gottlieb, N.H., & Burdine, J.N. (1987). The business of health promotion: Ethical issues and professional responsibilities. Health Education Quarterly, 14(1), 91-109.

McNeely, E. (1990). An organizational study of hazard communication: The health provider approach. AAOHN Journal, 38(4), 165-173.

Mechanic, D. (1962). Sources of power of lower participants in complex organizations. Administrative Science Quarterly, 7(3), 349-364.

Mendell, M.J., & Smith, A.H. (1990). Consistent patterns of elevated symptoms in air-conditioned office buildings: A re-analysis of epidemiologic studies. American Journal of Public Health, 80(10), 1193-1199.

Merton, R.K. (1987). The focussed interview and focus groups: Continuities and discontinuities. Public Opinion Quarterly, 51(4), 550-566.

Merton, R.K., with the assistance of Fiske, M., & Curtis, A. (1955). Definitions of a situation. In P.F. Lazarsfeld & M. Rosenberg (Eds.), The language of social research: A reader in the methodology of social research (pp. 170-174). New York: The Free Press.

Meyer, M.W. (1978). Introduction: Recent developments in organizational research and theory. In M.W. Meyer, & Associates, Environments and organizations (pp. 1-19). London: Jossey-Bass Publishers.

Miles, M.B., & Huberman, A.M. (1984). Qualitative data analysis: A sourcebook of new methods. London: Sage Publications.

Miller, J. (1986). Fire resistant workwear. Occupational Health & Safety Magazine, 8(4), 5-7.

Mills, C.W. (1959). The sociological imagination. Oxford: Oxford University Press.

Miner, J.B. (1982). Theories of organizational structure and process. Toronto: The Dryden Press.

Mintzberg, H. (1979). The structuring of organizations: A synthesis of the research. Englewood Cliffs, N.J.: Prentice-Hall, Inc.

Mintzberg, H. (1980). Structure in 5's: A synthesis of the research on organization design. Management Science, 26(3), 322-341.

Mintzberg, H. (1981). Organization design: Fashion or fit? Harvard Business Review, 59, 103-116.

Mishler, E.G. (1979). Meaning in context: Is there any other kind? Harvard Educational Review, 49(1), 1-19.

Mitchell, E.S. (1986). Multiple triangulation: A methodology for nursing science. Advances in Nursing Science, 8(3), 18-26.

Mohr, L.B. (1971). Organizational technology and organizational structure. Administrative Science Quarterly, 16(4), 444-459.

Molnar, J.J., & Rogers, D.L. (1976). Organizational effectiveness: An empirical comparison of the goal and system resource approaches. The Sociological Quarterly, 17(3), 401-413.

Moore, J.E. (1977). Community health nursing in Alberta: Current manpower and programs 1977. Edmonton: Alberta Social Services and Community Health.

Morey, P.R., & Woods, J.E. (1987). Indoor air quality in health care facilities. Occupational Medicine: State of the Art Reviews, 2(3), 547-563.

Morgan, D.L. (1988). Focus groups as qualitative research. London: Sage Publications.

Morgan, D.L., & Spanish, M.T. (1984). Focus groups: A new tool for qualitative research. Qualitative Sociology, 7(3), 253-270.

Morgan, G. (1986). Images of organization. London: Sage Publications.

Morrison, I. (1984). The plight of the district nurse...overload. Nursing Times, 80(4), 72.

Morrison, P.M. (1983). A descriptive study of the administrative behavior of Alberta community health nursing managers. Unpublished master's thesis, University of Alberta, Edmonton.

Morse, J.M. (1991). Strategies for sampling. In J.M. Morse (Ed.), Qualitative Nursing Research: A contemporary dialogue (rev. ed., pp. 127-145). London: Sage Publications.

Moser, C. (1987). Training for WHMIS: The warm-up has begun. Occupational Health & Safety Canada, 3(4), 32-37.

Muldoon, J.T., Wintermeyer, L.A., Eure, J.A., Fuortes, L., Merchant, J.A., Van Lier, S.F., & Richards, T.B. (1987). Occupational disease surveillance data sources, 1985. American Journal of Public Health, 77(8), 1006-1008.

Munhall, P.L. (1989). Qualitative methods. In P.J. Brink & M.J. Wood (Eds.), Advanced design in nursing research (pp. 161-179). London: Sage Publications.

Murphy, L.R., & Hurrell, J.J. (1987). Stress measurement and management in organizations: Development and current status. In A.W. Riley & S.J. Zaccaro (Eds.), Occupational stress and organizational effectiveness (pp. 29-51). New York: Praeger.

Nahrwold, S.C. (1987). Employee assistance programs: Managing organizational stress and strain. In A.W. Riley & S.J. Zaccaro (Eds.), Occupational stress and organizational effectiveness (pp. 205-227). New York: Praeger.

National Institute for Occupational Safety and Health (1985). Report of the Division of Surveillance, Hazard Evaluations and Field Studies Task Force on hospital worker health. Cincinnati, Ohio: Centers for Disease Control.

Navarro, V. (1980). Work, ideology, and science: The case of medicine. International Journal of Health Services, 10(4), 523-550.

Navarro, V. (1982). The labour process and health: A historical materialist interpretation. International Journal of Health Services, 12(1), 5-29.

Navarro, V. (1986). Crisis, health, and medicine: A social critique. New York: Tavistock Publications.

Needleman, H.L. (1989). The persistent threat of lead: A singular opportunity. American Journal of Public Health, 79(5), 643-645.

Nelkin, D. (1985). Ethical conflicts in occupational medicine. In D. Nelkin (Ed.), The language of risk: Conflicting perspectives on occupational health (pp. 135-153). London: Sage Publications.

Nelkin, D., & Brown, M.S. (1984). Workers at risk: Voices from the workplace. Chicago: University of Chicago Press.

Nelson, J.E., & Frontczak, N.T. (1988). How acquaintaceship and analyst can influence focus group results. Journal of Advertising, 17(1), 41-48.

Nelson, K.E. (1987). Prevention of hepatitis in health care workers. Occupational Medicine: State of the Art Reviews, 2(3), 451-470.

Nelson, K.E., & Sullivan-Bolyai, J.Z. (1987). Preventing teratogenic viral infections in hospital employees: The cases of rubella, cytomegalovirus and varicella-zoster virus. Occupational Medicine: State of the Art Reviews, 2(3), 471-498.

Neuberger, J.S., Kammerdiener, A.M., & Wood, C. (1988). Traumatic injuries among medical center employees. AAOHN Journal, 36(8), 318-325.

Nguyen, V.H., Goyer, N., & Donnini, G. (1988). Something in the air. Occupational Health and Safety Canada, 4(6), 30-38, 74.

Noblit, G.W., & Engel, J.D. (1991). The holistic injunction: An ideal and a moral imperative for qualitative research. Qualitative Health Research, 1(1), 123-130.

Nordham, J.C. (1990). Safe handling considerations for topical chemotherapy. Oncology Nursing Forum, 17(1), 113-114.

North York Department of Public Health. (1984). A management study of the Department of Public Health. North York, Ontario: Author.

Northcott, H.C., & Lowe, G.S. (1987). Job and gender influences in the subjective experience of work. Canadian Review of Sociology and Anthropology, 24(1), 117-131.

Nyhlin, K.T. (1990). A contribution of qualitative research to a better understanding of diabetic patients. Journal of Advanced Nursing, 15(7), 796-803.

Occupational cancer: The substances behind the disease. (1986). Occupational Health & Safety Canada, 2(1), 10-13.

Oldham, G.R., & Hackman, J.R. (1981). Relationships between organizational structure and employee reactions: Comparing alternative frameworks. Administrative Science Quarterly, 26, 66-83.

Olishifski, J.B., & Plog, B.A. (1988). Overview of industrial hygiene. In B.A. Plog (Ed.), Fundamentals of industrial hygiene (3rd ed., pp. 3-28). Chicago: National Safety Council.

O'Neill, M. (1989/90). Healthy public policy: The WHO perspective. Health Promotion, 28(3), 6-8, 24.

Orr, J. (1988). We don't need dead heroines...aggression and violence are everyday hazards for health professionals. Nursing Times, 84(36), 22.

Ostwald, S.K., & Williams, H.Y. (1987). Community health nursing in workplace health programs: Rationale and ethics. Journal of Community Health Nursing, 4(3), 121-130.

Ott, M.G. (1977). Linking industrial hygiene and health records. Journal of Occupational Medicine, 19(6), 388-390.

Panitch, L., & Swartz, D. (1988). The assault on trade union freedoms: From consent to coercion revisited. Toronto: Garamond Press.

Pannet, B., Coggon, D., & Acheson, E. (1985). A job-exposure matrix for use in population based studies in England and Wales. British Journal of Industrial Medicine, 42(11), 777-783.

Parasuraman, S., & Hansen, D. (1987). Coping with work stressors in nursing. Work and Occupation, 14(1), 88-105.

Parkes, K.R. (1990). Coping, negative affectivity, and the work environment: Additive and interactive predictors of mental health. Journal of Applied Psychology, 75(4), 399-409.

Patterson, N.B., Craven, D.E., Schwartz, D.A., Nardell, E.A., Kasmer, J., & Nobe, J. (1985). Occupational hazards to hospital personnel. Annals of Internal Medicine, 102, 658-680.

Pearlin, L.I. (1989). The sociological study of stress. Journal of Health and Social Behaviour, 30(3), 241-256.

Pecoraro, R.E., Inui, T.S., Chen, M.S., Plorde, D.K., & Heller, J.L. (1979). Validity and reliability of a self-administered health history questionnaire. Public Health Reports, 94(3), 231-238.

Pedersen, D.H., Venable, H.L., & Sieber, W.K. (1990). Journal of Occupational Medicine, 32(10), 1037-1041.

Pellegrino, E.D. (1981). Health promotion as public policy: The need for moral grounding. Preventive Medicine, 10, 371-378.

Pennings, J.M., & Goodman, P.S. (1977). Toward a workable framework. In P.S. Goodman, J.M. Pennings, & Associates, New perspectives on organizational effectiveness (pp. 146-184). London: Jossey-Bass Publishers.

Perkins, F. (1991, October). Supportive environments for health: The Sundsvall statement. Alberta Public Health Association Newsletter, 6.

Perrewe, P.L., & Ganster, D.C. (1989). The impact of job demands and behavioral control on experienced job stress. Journal of Organizational Behaviour, 10(3), 213-229.

Perrow, C.B. (1970). Organizational analysis: A sociological view. London: Tavistock Publications, Ltd.

Perrow, C. (1984). Normal accidents: Living with high-risk technologies. New York: Basic Books, Inc.

Perrow, C. (1986). Complex organizations: A critical essay (3rd ed.). New York: Random House.

Pettigrew, A. (1985). The awakening giant: Continuity and change in Imperial Chemical Industries. Oxford: Basil Blackwell.

Pfeffer, J. (1981). Power in organizations. Marshfield, Massachusetts: Pitman Publishing Inc.

Pheysey, D.C., Payne, R.L., & Pugh, D.S. (1971). Influence of structure at organizational and group levels. Administrative Science Quarterly, 16(1), 61-73.

Pierce, C., & Page, B. (1986). A male/female continuum: Paths to colleagueship. Laconia, New Hampshire: New Dynamics.

Pondy, L.R. (1970). Toward a theory of internal resource-allocation. In M.N. Zald (Ed.), Power in organizations (pp. 270-311). Nashville: Vanderbilt University Press.

Porter-O'Grady, T. (1991). A nurse on the Board. Journal of Nursing Administration, 21(1), 40-46.

Premier's Commission on Future Health Care for Albertans. (1989). The rainbow report: Our vision for health. Edmonton: Queen's Printer.

Price, P. (1991). Indoor air quality: A discussion of the terminology. At The Centre, 13, 25.

Pries, C.N. (1981). Reproductive effects of occupational exposures. American Family Physician, 24(22), 161-165.

Promoting health in hospitals. (1987). Health Promotion, 25(3), 14-15.

Province of Alberta. (RSA 1980). Health Unit Act. Edmonton: Queen's Printer.

Province of Alberta. (RSA 1980). Occupational Health and Safety Act. Edmonton: Queen's Printer.

Province of Alberta. (RSA 1981). Workers' Compensation Act: Consolidated General Regulations. Edmonton: Queen's Printer.

Province of Alberta. (RSA 1984). Public Health Act. Edmonton: Queen's Printer.

Prus, R. (1990). The interpretive challenge: The impending crisis in sociology. Canadian Journal of Sociology, 15(3), 355-363.

Pugh, D.S., & Hickson, D.J. (1976). Organizational structure in its context. Farnborough: Saxon House and Levington Books.

Pugh, D.S., Hickson, D.J., Hinings, C.R., & Turner, C. (1968). Dimensions of organization structure. Administrative Science Quarterly, 13, 65-105.

Pugh, D., Hickson, D., Hinings, C., & Turner, C. (1969). The context of organization structures. Administrative Science Quarterly, 14, 91-114.

Quinlan, M. (1988). Psychological and sociological approaches to the study of occupational illness: A critical review. Australian and New England Journal of Sociology, 24(2), 189-207.

Quinn, N. (1983). Health hazards of operating video display terminals. Nurse Practitioner, 8(9), 49-54.

Rachootin, P., & Olsen, J. (1983). The risk of infertility and delayed conception associated with exposures in the Danish workplace. Journal of Occupational Medicine, 25(5), 394-402.

Ramondt, J. (1988, July 9). Clinic head quits over lack of funds. Calgary Herald, p. B1.

Randolph, S.A. (1984). Stress, working women, and an occupational stress model. Occupational Health Nursing, 32(12), 622-625.

Raniere, T.M. (1989). Prevention of cumulative trauma injuries. AAOHN Journal, 37(6), 221-225.

Ranson, S., Hinings, B., & Greenwood, R. (1980). The structuring of organizational structures. Administrative Science Quarterly, 25, 1-17.

Reasons, C.E., Ross, L.L., & Paterson, C. (1981). Assault on the worker: Occupational health and safety in Canada. Toronto: Butterworths.

Registered Nurses Association of Ontario. (1981). A survey of head nurses/ first line managers and chief executive nurses/directors of nursing in Ontario. Toronto: Author.

Reich, M.R., & Goldman, R.H. (1984). Italian occupational health: Concepts, conflicts, implications. American Journal of Public Health, 74(9), 1031-1041.

Renzetti, C.M., & Curran, D.J. (1989). Women, men, and society: The sociology of gender. Toronto: Allyn and Bacon.

Reskin, B.F., & Hartmann, H. (1991). Women's work, men's work: Sex segregation on the job. In L. Kramer (Ed.), The sociology of gender (pp. 265-287). New York: St. Martin's Press.

Riley, A.W., & Zaccaro, S.J. (1987). Preface. In A.W. Riley, & S.J. Zaccaro (Eds.), Occupational stress and organizational effectiveness (pp. ix-xii). London: Praeger.

Ritzer, G., & Walczak, D. (1986). Working: Conflict and change (3rd ed.). Englewood Cliffs, N.J.: Prentice-Hall.

Roberts, C. (1990/1991). Too much to ask: Violence in the workplace - Professional, retail and office workers fight back. At The Source, 11(3), 4-7.

Robinson, J.C. (1987). Worker responses to workplace hazards. Journal of Health Politics, Policy and Law, 12(4), 665-679.

Rogan, W.J. (1986). Breastfeeding in the workplace. Occupational Medicine State of the Art Reviews, 1(3), 411-413.

Rogers, B. (1986). Antineoplastic agents: Action and toxicities. AAOHN Journal, 34(11), 530-537.

Rogers, B. (1987). Health hazards to personnel handling antineoplastic agents. Occupational Medicine: State of the Art Reviews, 2(3), 513-524.

Rogers, B. (1989). Establishing research priorities in occupational health nursing. AAOHN Journal, 37(12), 493-500.

Rogers, B. (1991). Hospital-employee health: Minimizing risks. AAOHN Journal, 39(4), 155.

Rogers, B., & Emmett, E.A. (1987). Handling antineoplastic agents: Urine mutagenicity in nurses. Image: Journal of Nursing Scholarship, 19(3), 108-113.

Rogers, B. & Haynes, C. (1991). A study of hospital employee health programs. AAOHN Journal, 39(4), 157-166.

Rosen, R.H., & Lee, F.C. (1987). Occupational mental health: A continuum of care. In A.W. Riley & S.J. Zaccaro (Eds.), Occupational stress and organizational effectiveness (pp. 245-267). New York: Praeger.

Rosenberg, H.G. (1984). The home is the workplace: Hazards, stress, and pollutants in the household. In W. Chavkin (Ed.), Double exposure: Women's health hazards on the job and at home (pp. 219-245). New York: Monthly Review Press.

Rosenberg, M. (1986). Reproduction and the working environment. In B.J. Sachs & D. Archer (Eds.), Clinical obstetrics: A public health perspective (pp. 205-231). Littleton, Massachusetts: PSG Publishing Company, Inc.

Rosenstock, L., & Landrigan, P.J. (1986). Occupational health: the intersection between clinical medicine and public health. Annual Review of Public Health, 7, 337-356.

Rosenstock, L., Logerfu, J., Heyer, N.J., & Carter, W.B. (1984). Developmental validation of a self-administered occupational health history questionnaire. Journal of Occupational Medicine, 26(1), 50-54.

Rossignol, M. (1991). Planning preventive occupational health services at the community level. Canadian Journal of Public Health, 82(2), 115-119.

Rowe, P.M., & Giuffre, M. (1991). Evaluating needlestick injuries in nursing personnel: Development of a questionnaire. AAOHN Journal, 39(11), 503-507.

Ryan, T. (1987). Putting the pieces together: The progressive approach to accident investigation. Occupational Health and Safety Canada, 3(2), 40-47.

Ryan, W. (1971). Blaming the victim. New York: Pantheon Books.

Saari, J. (1990). On strategies and methods in company safety work: From informational to motivational strategies. Journal of Occupational Accidents, 12(1-3), 107-117.

Salancik, G.R., & Pfeffer, J. (1974). The bases and use of power in organizational decision-making: The case of a university. Administrative Science Quarterly, 19, 453-473.

Sandy Hill Health Centre. (1984). Environmental/occupational history form. Ottawa: Author.

Sass, R. (1985). The labour process and health: An alternative conception to occupational health and safety. Windsor Yearbook of Access to Justice, 5, 352-367.

Sass, R. (1986). Workplace health and safety: Report from Canada. International Journal of Health Services, 8(2), 213-234.

Sass, R. (1989). The implications of work organizations for occupational health policy: The case of Canada. International Journal of Health Services, 19(1), 157-173.

Sass, R., & Crook, G. (1981). Accident proneness: Science or non-science? International Journal of Health Services, 11(2), 175-190.

Saunders, E. (1982). Theoretical approaches to the study of women. In D. Forcese & S. Richer (Eds.), Social issues: Sociological views of Canada (pp. 218-235). Scarborough: Prentice-Hall Canada.

Schartner, A. (1982). Health units of Alberta. Edmonton: Health Unit Association of Alberta.

Schatzman, L., & Strauss, A.L. (1973). Field research: Strategies for natural sociology. Englewood Cliffs, New Jersey: Prentice-Hall Inc.

Schottenfeld, D., & Haas, J.F. (1978a). The workplace as a cause of cancer: Part one. Clinical Bulletin, 8(2), 54-60.

Schottenfeld, D., & Haas, J.F. (1978b). The workplace as a cause of cancer: Part two. Clinical Bulletin, 8(3), 107-119.

Schwartz, J.E., Pieper, C.F., & Karasek, R.A. (1988). A procedure for linking psychosocial job characteristics data to health surveys. American Journal of Public Health, 78(8), 904-909.

Scott, J.A. (1984). Keeping women in their place: Exclusionary policies and reproduction. In W. Chavkin (Ed.), Double exposure: Women's health hazards on the job and at home (pp. 180-195). New York: Monthly Review Press.

Scott, W.R. (1977). Effectiveness of organizational effectiveness studies. In P.S. Goodman, J.M. Pennings, & Associates, New perspectives on organizational effectiveness (pp. 63-95). London: Jossey-Bass Publishers.

Scott, W.R., Flood, A.B., Ewy, W., & Forrest, W.H.Jr. (1978). Organizational effectiveness and the quality of surgical care in hospitals. In M.W. Meyer, & Associates, Environments and organizations (pp. 290-305). London: Jossey-Bass Publishers.

Seashore, S.E. (1977). An elastic and expandable viewpoint. In P.S. Goodman, J.M. Pennings, & Associates, New perspectives on organizational effectiveness (pp. 185-192). London: Jossey-Bass Publishers.

Segall, M.E., & Wynd, C.A. (1990). Health conception, health locus of control, and power as predictors of smoking behavior change. American Journal of Health Promotion, 4(5), 338-344, 372.

Seidel, J.V., Kjolseth, R., & Seymour, E. (1988). The ethnograph: A user's guide (Version 3.0). Littleton, Colorado: Qualis Research Associates.

Selevan, S.G., Hemminki, K., & Lindbohm, M.L. (1986). Linking data to study reproductive effects of occupational exposures. Occupational Medicine: State of the Art Reviews, 1(3), 445-455.

Selevan, S.G., Lindbohm, M.L., Hornung, R.W., & Hemminki, K. (1985). A study of occupational exposure to antineoplastic drugs and fetal loss in nurses. New England Journal of Medicine, 313(19), 1173-1178.

Seligman, P.J., & Matte, T.D. (1991). Case definitions in public health. American Journal of Public Health, 81(2), 161.

Selye, H. (1976). Stress in health and disease. Woburn, Mass.: Butterworths.

Sever, L.E. (1981). Reproductive hazards of the workplace. Journal of Occupational Medicine, 23(10), 685-689.

Shaw, M. (1990). Building consensus in the 90's. At The Centre, 9, 3.

Sheatsley, P.B. (1983). Questionnaire construction and item writing. In P.H. Rossi, J.D. Wright, & A.B. Anderson (Eds.), Handbook of survey research (pp. 195-230). Toronto: Academic Press, Inc.

Shedding some light on radiation. (1990). Safety Scribe, 5(1), 7-8.

Shindell, S., & Goldberg, H.M. (1981). Surveillance systems: What to include and why. Occupational Health and Safety, 50(7), 34-39, 56.

Shrivastava, P. (1988). Industrial crisis management: Learning from organizational failures. Journal of Management Studies, 25(4), 283-284.

Shrivastava, P., Mitroff, I.I., Miller, D., & Miglani, A. (1988). Understanding industrial crises. Journal of Management Studies, 25(4), 285-303.

Siemiatycki, J., Day, N.E., Fabry, J., & Cooper, J.A. (1981). Discovering carcinogens in the occupational environment: A novel epidemiologic approach. Journal of the National Cancer Institute, 66(2), 217-225.

Skillen, D.L. (1988). Occupational risk factor assessment for community-based health professionals. Canadian Journal of Nursing Research, 20(2), 49-60.

Skov, P., Valbjorn, O., & Pedersen, B.V. (1990). Influence of indoor climate on the sick building syndrome in an office environment. Scandinavian Journal of Work, Environment and Health, 16(5), 363-371.

Slater, J. (1990). Effecting personal effectiveness: Assertiveness training for nurses. Journal of Advanced Nursing, 15, 337-356.

Sloan, R.P. (1987). Workplace health promotion: A commentary on the evolution of a paradigm. Health Education Quarterly, 14(2), 181-194.

Smith, D.L. (1988). WHMIS at the work site. Occupational Health & Safety Magazine, 12(40), 6-8, 13-14.

Snapp, J. (1990). The unsafe workplace: A hospital's perspective. Health Law in Canada, 11(2), 41-42.

Snyder, T.B., Himmelstein, J., Pransky, G., & Beavers, J.D. (1991). Business analysis in occupational health and safety consultations. Journal of Occupational Medicine, 33(10), 1040-1050.

Spasoff, R.A. (1990). Current trends in Canadian health care: Disease prevention and health promotion. Journal of Public Health Policy, 11(2), 161-168.

Spence, A.P. (1989). Biology of human aging. Englewood Cliffs, N.J.: Prentice Hall.

Spencer, M. (1990). Foundations of modern sociology (Canadian 5th ed.). Scarborough, Ontario: Prentice-Hall Canada Inc.

Spiegel, J., & Yassi, A. (1991). Occupational disease surveillance in Canada: A framework for considering options and opportunities. Canadian Journal of Public Health, 82(5), 294-299.

Spinner, B. (1991). Occupational fatalities and motor vehicle accidents. At The Centre, 14, 16-18.

Stacey, J., & Thorne, B. (1985). The missing feminist revolution in sociology. Social Problems, 32(4), 301-316.

Stachtchenko, S., & Jenicek, M. (1990). Conceptual differences between prevention and health promotion: Research implications for community health programs. Canadian Journal of Public Health, 81(1), 53-59.

Statistics Canada. (1988, March.) The labour force: Work injuries in Canada 1982-1986. Ottawa: Labour and Household Surveys Analysis Division.

Steers, R.M. (1975). Problems in the measurement of organizational effectiveness. Administrative Science Quarterly, 20, 546-558.

Stern, P. (1980). Grounded theory methodology: Its uses and processes. Image, 12, 20-23.

Stern, P.N., & Pyles, S.H. (1986). Using grounded theory methodology to study women's culturally based decisions about health. In P.N. Stern (Ed.), Women, Health, and Culture (pp. 1-24). Washington: Hemisphere Publishing Corporation.

Stevens, K.R. (1989). Safe handling of cytotoxic drugs in home chemotherapy. Seminars in Oncology Nursing, 5(2, Suppl 1), 15-20.

Stewart, D.W., & Shamdasani, P.N. (1990). Focus groups: Theory and practice. London: Sage Publications.

Stock, S.R., Gafni, A., & Block, R.F. (1990). Universal precautions to prevent HIV transmission to health care workers: An economic analysis. Canadian Medical Association Journal, 142(9), 937-946.

Stockdale, J.E. (1991). Sexual harassment at work. In J. Firth-Cozens & M.A. West (Eds.), Women at work: Psychological and organizational perspectives (pp. 53-65). Buckingham: Open University Press.

Strand, S.H., & Johnson, W.G. (1980). Differentiating occupational illness and injury: The private costs and economic incentives. Social Science and Medicine, 14C(4), 259-266.

Strasser, J.A. (1991). Qualitative clinical nursing research when a community is the client. In J.M. Morse (Ed.), Qualitative nursing research: A contemporary dialogue (rev. ed., pp. 106-125). London: Sage Publications.

Strauss, A., & Corbin, J. (1990). Basics of qualitative research: Grounded theory procedures and techniques. London: Sage Publications.

Sundin, D.S., Pedersen, D.H., & Frazier, T.M. (1986). Occupational hazard and health surveillance. American Journal of Public Health, 76(9), 1083-1084.

Sutherland, J., Clegg, S., & DeCourcey, K. (1986). Health hazards in the workplace - An approach to surveillance. AAOHN Journal, 34(11), 547-553.

Taylor, R.C.R. (1982). The politics of prevention. Social Policy, 13(1), 32-41.

Tenove, S.C. (1981). Procedures and criteria used by Alberta health units in selecting community health nurses. Unpublished master's thesis, University of Alberta, Edmonton.

Terborg, J.R. (1988). The organization as a context for health promotion. In S. Spacapan & S. Oskamp (Eds.), Social psychology of health (pp. 129-174). London: Sage Publications.

Tesh, S. (1981). Disease causality and politics. Journal of Health Politics, Policy and Law, 6(3), 369-390.

The impaired worker. (1988). Occupational Health & Safety Magazine, 11(3), 14-16.

Theberge, N. (1990). Gender, work, and power: The case of women in coaching. Canadian Journal of Sociology, 15(1), 59-75.

Thomas, W.I., & Thomas, D.S. (1928). The child in America: Behavior problems and programs. New York: Alfred A. Knopf.

Throckmorton, J. (1980). Noise is a health hazard. Edmonton: Environment Council of Alberta.

Tindale, J.A. (1991). Older workers in an aging workforce. Background paper prepared for the National Advisory Council on Aging.

Triolo, P.K. (1989a). Occupational health hazards of hospital staff nurses. Part I: Overview and psychosocial stressors. AAOHN Journal, 37(6), 232-237.

Triolo, P.K. (1989b). Occupational health hazards of hospital staff nurses. Part II: Physical, chemical, and biological stressors. AAOHN Journal, 37(7), 274-279.

Turner, B.A. (1976). The organizational and interorganizational development of disasters. Administrative Science Quarterly, 21, 378-397.

Turner, J. (1984). Communicable diseases and infection control practices in community health. In M. Stanhope & J. Lancaster (Eds.), Community health nursing: Process and practice for promoting health (pp. 259-264). Toronto: The C.V. Mosby Company.

Turshen, M. (1989). The politics of public health. New Brunswick, New Jersey: Rutgers University Press.

Underwood, E.J., Woodcox, V., Van Berkel, C., Black, M., & Ploeg, J. (1991). Organizing public health nursing for the 1990s: Generalist or specialist. Canadian Journal of Public Health, 82(4), 245-248.

Valanis, B. (1986). Environmental and direct measures of exposure. Occupational Medicine: State of the Art Reviews, 1(3), 431-444.

Valentine, J.M., & Plough, A.L. (1983). Protecting the reproductive health of workers: Problems in science and public policy. Journal of Health Politics, Policy and Law, 8(1), 144-163.

Van de Ven, A.H., & Ferry, D.L. (1980). Measuring and assessing organizations. Toronto: John Wiley & Sons.

Van Den Eeden, S.K., & Wilkinson, W.E. (1985). Health screening for hospital personnel exposed to waste anaesthetic gases. Occupational Health Nursing, 33(2), 73-76.

van Dormolen, M., Hertog, C.A.W.M., van Dijk, F.J.H., Kompier, M.A.J., & Fortuin, R. (1990). The quest for interaction: Studies on combined exposure. International Archives of Occupational and Environmental Health, 62(4), 279-287.

van Roosmalen, E. (1991). Attitudes toward workplace smoking policies in Alberta: 1990 Alberta Study. Edmonton: Population Research Laboratory, Department of Sociology, University of Alberta.

Vaughan, T.R., & Sjoberg, G. (1978). Comments. The American Sociologist, 13(3), 171-172.

Vianna, N.J., Kovasznay, B., Polan, A., & Ju, C. (1984). Infant leukemia and paternal exposure to motor vehicle exhaust fumes. Journal of Occupational Medicine, 26(9), 679-682.

Viscusi, W.K. (1983). Risk by choice: Regulating health and safety in the workplace. Cambridge, Mass.: Harvard University Press.

Vlahov, D., & Polk, B.F. (1987). Transmission of human immunodeficiency virus within the health care setting. Occupational Medicine: State of the Art Reviews, 2(3), 429-450.

von Hauff, D. (1990). You can't read can you? Occupational Health & Safety Magazine, 12(4), 6-8, 13-14.

von Hauff, D. (1991). EAPs: The high touch, high tech workplace imperative. Occupational Health and Safety Magazine, 13(4), 6-8, 13-15.

Waitzkin, H. (1981). A Marxist analysis of the health care systems of advanced capitalist societies. In L. Eisenberg & A. Kleinman (Eds.), The relevance of social science for medicine (pp. 333-369). Boston: D. Reidel Publishing Company.

Walby, S. (1990). Theorizing patriarchy. Oxford: Basil Blackwell.

Walkinshaw, D.S. (1991). Indoor air: The need for indoor air quality standards. At The Centre, 13, 18-20, 35.

Wallace, M. (1989). Brave new workplace: Technology and work in the new economy. Work and Occupations, 16(4), 363-392.

Walsh, D.C. (1988). Toward a sociology of worksite health promotion: A few reactions and reflections. Social Science and Medicine, 26(5), 569-575.

Walters, V. (1982). Company doctors' perceptions of and responses to conflicting pressures from labour and management. Social Problems, 30(1), 1-12.

Walters, V. (1985). The politics of occupational health and safety: Interviews with workers, health and safety representatives and company doctors. Canadian Review of Sociology & Anthropology, 22(1), 57-59.

Walters, V. (1987). Company doctors: Standards of care and legitimacy. In D. Coburn, C. D'Arcy, G.M. Torrance & P. New (Eds.), Health and Canadian society: Sociological perspectives (2nd ed., pp. 216-238). Markham, Ont.: Fitzhenry & Whiteside.

Walters, V., & Haines, T. (1988). Workers' perceptions, knowledge, and responses regarding occupational health and safety: A report on a Canadian study. Social Science and Medicine, 27(11), 1189-1196.

Warren, R.A. (1988). Safety and health promotion at work. In Health & Welfare Canada (Ed.), Canada's health promotion survey: Technical report (pp. 123-137). Ottawa: Minister of Supplies and Services.

Webster's ninth new collegiate dictionary. (1987). Springfield, Massachusetts: Merriam-Webster Inc.

Weeks, J.L. (1990). Occupational medicine in Canada: An end or a new beginning? Canadian Medical Association Journal, 142(3), 215-219.

Weeks, J.L., & Jordan, M.L. (1985). Chronic hazards and acute enforcement: Dilemma for occupational health enforcement policy. Milbank Memorial Fund Quarterly, 63(1), 127-140.

Wegman, D.H., Boden, L., & Levenstein, C. (1975). Health hazard surveillance by industrial workers. American Journal of Public Health, 65(1), 26-30.

Wegman, D.H., & Fine, L.J. (1990). Occupational health in the 1990s. Annual Review of Public Health, 11, 89-103.

Wegman, D.H., & Froines, J.R. (1985). Surveillance needs for occupational health. American Journal of Public Health, 75(11), 1259-1261.

Weick, K.E. (1977). Re-punctuating the problem. In P.S. Goodman, J.M. Pennings, & Associates, New perspectives on organizational effectiveness (pp. 193-225). London: Jossey-Bass Publishers.

Weinstein, M.S. (1985). Health promoting work. Canadian Journal of Public Health, 76(Suppl 1), 52-55.

Weir, G. (1990). Safety and you. Safety Scribe, 4(3), 6.

Werner, O., & Schoepfle, G.M. (1987). Systematic fieldwork (Vol. 2): Ethnographic analysis and data management. Beverly Hills: Sage Publications.

West, M. (1989). Prescriptions for health visiting. Health Visitor, 62(12), 378-381.

West, M.A., Jones, A., & Savage, Y. (1988). Stress in health visiting: A quantitative assessment. Health Visitor, 61(9), 269-271.

West, M.A., & Savage, Y. (1988a). Stress in health visiting: Qualitative accounts. Health Visitor, 61(10), 305-308.

West, M.A., & Savage, Y. (1988b). Coping with stress in health visiting. *Health Visitor*, *61*(12), 366-368.

White, K.L. (1991). *Healing the schism: Epidemiology, medicine, and the public's health*. New York: Springer-Verlag.

WHMIS II. (1990). *Safety Scribe*, *5*(1), 6.

Whorton, D.M. (1986). Male reproductive hazards. *Occupational medicine: State of the Art Reviews*, *1*(3), 375-379.

Wikler, D. (1987). Who should be blamed for being sick? *Health Education Quarterly*, *14*(1), 11-25.

Wilkinson, W.E. (1987). Occupational injury at a midwestern health science centre and teaching hospital. *AAOHN Journal*, *35*(8), 367-376.

Willoughby, J., & Keating, N. (1991). Being in control: The process of caring for a relative with Alzheimer's disease. *Qualitative Health Research*, *1*(1), 27-50.

Wilson, J. (1983). *Social theory*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.

Wilson, S.J. (1991). *Women, families and work* (3rd ed.). Toronto: McGraw-Hill Ryerson Limited.

Wineman, S. (1984). *The politics of human services: Radical alternatives to the welfare state*. Montreal: Black Rose Books.

Winett, R.A., King, A.C., & Altman, D.G. (1989). *Health psychology and public health*. Toronto: Pergamon Press.

Wood, J.E., Tiedje, L.B., & Abraham, I.L. (1986). Practising autonomously: A comparison of nurses. *Public Health Nursing*, *3*(3), 130-139.

Worker drowns in sump pit. (1988). *Occupational Health & Safety Magazine*, *10*(4), 3.

Workers' Compensation Board - Alberta. (1983). *Classification of industries and provisional assessment rates*. Edmonton: Author.

Workers' Compensation Board - Alberta. (1989). *1988 Annual report*. Edmonton: Author.

World Health Organization, Health and Welfare Canada, & Canadian Public Health Association. (1986). Ottawa Charter for health promotion. *Canadian Journal of Public Health*, *77*(6), 425-430.

Wuest, J., & Stern, P.N. (1991). Empowerment in primary health care: The challenge for nurses. Qualitative Health Research, 1(1), 80-99.

Wuorinen, V. (1984). Check-list and guidelines for joint occupational health and safety committees: Organizational factors. Hamilton: Canadian Centre for Occupational Health and Safety.

Wuorinen, V. (1991). Accidents are caused by unsafe acts. At The Centre, 10, 17-18.

Yassi, A. (1988). The development of worker-controlled occupational health centers in Canada. American Journal of Public Health, 78(6), 689-693.

Yassi, A., & Guidotti, T.L. (1990). Occupational health services for hospital workers. Healthcare Management Forum, 3(3), 20-22.

Yodaiken, R.E. (1984). Occupational disease: Problems of risk assessment. Clinics in Laboratory Medicine, 4(3), 475-482.

Yonge, O. (1989). Nurses' and patients' perceptions of constant care in an acute care psychiatric facility: A descriptive qualitative study. Unpublished PhD dissertation, University of Alberta, Edmonton.

Yonge, O., & Stewin, L. (1988). Reliability and validity: Misnomers for qualitative research. Canadian Journal of Nursing Research, 20(2), 61-67.

Yu, L.C., Mansfield, P.K., Packard, J.S., Vicary, J., & McCool, W. (1989). Occupational stress among nurses in hospital settings. AAOHN Journal, 37(4), 121-128.

Zaccaro, S.J., & Riley, A.W. (1987). Stress, coping, and organizational effectiveness. In A.W. Riley & S.J. Zaccaro (Eds.), Occupational stress and organizational effectiveness (pp. 1-28). New York: Praeger.

Zechetmayr, M. (1989). Health promotion programs: A new form of workforce control? Quarterly Journal of Ideology, 13(1), 25-37.

Zenz, C. (1984, September). Reproductive risks in the workplace. National Safety News, 38-46.

Zey-Ferrell, M., & Aiken, M. (1981). Complex organizations: Critical perspectives. Glenview, Illinois: Scott, Foresman and Company.

Zielhuis, R.L., Stijkel, A., Verberk, M.M., & van de Poel-Bot, M. (1984). Health risks to female workers in occupational exposure to chemical agents. New York: Springer-Verlag.

Zoloth, S., & Stellman, J. (1987). Hazards of healing: Occupational health and safety in hospitals. Women and Work, 2, 45-68.

Zucker, L.G. (1987). Institutional theories of organization. Annual Review of Sociology, 13, 443-464.

APPENDIX A

Alberta
HEALTH

Seventh Street Plaza, 10030 - 107 Street, Edmonton, Alberta, Canada T5J 3E4

December 5, 1990

In Replying Please Quote

To: Directors/Supervisors of Community Health Nursing

In follow-up to her presentation at our October Provincial Meeting, Lynn Skillen has asked that we distribute the attached summary of salient points about her research project. She has been in touch further with a few of you and very much appreciates the support she is getting. She would also welcome further contact with any other interested health units.

To avoid any possible confusion, I would also like to make clear distinction between Lynn's study and the Quality of Worklife Study of Community-Based Nurses, which will be happening at approximately the same time. The Quality of Worklife Study, initiated by Sharon Snell, in response to requests from community nurses, will be a comprehensive survey of a large sample of community-based nurses, by mailout questionnaire. It is intended to provide baseline data on a broad range of worklife factors. Lynn's study will be a more in-depth study of a particular segment of those worklife factors (specific aspects of work environments), using an interview format with community health nurses in a small sample of health units.

In summary, the two studies should complement each other and it is not anticipated that participation in either would interfere with the other.

Thanks for your interest and support. What a delight to see increasing activity in research related to community health nursing!

Sincerely,

Pearl M. Morrison

Pearl M. Morrison
Manager
Community Health Nursing

/lmh

Enclosure

c.c. Chief Executive Officers
Lynn Skillen

lmh338

A Proposal for Action Research
HEALTHY WORK ENVIRONMENTS: THE CHALLENGE FOR COMMUNITY HEALTH NURSES IN THE 1990s

PURPOSE OF THE STUDY

Workplaces have biological, chemical, ergonomic, physical, and psychosocial hazards and stressors. Work-related problems such as injuries, disease, reproductive outcomes, and stress have implications for community health nurses as employees, as managers, and as service providers. This study will describe the work hazards and stressors of staff and managerial community health nurses in a sample of 4-6 health units. It will identify intra- and extra-organizational factors that contribute to stressors and hazards and will generate mechanisms for the reduction of health and safety risks in the work environment.

STUDY TIME-LINES

November 1990-February 1991	- a meeting will be held with all community health nurses in interested health units in order to facilitate dialogue and collaboration before beginning the study
February-May 1991	- a one-hour taped interview, which includes a a short questionnaire, will be conducted on a one to one basis with all staff and managerial community health nurses in the study sample who agree to participate
June-October 1991	- a preliminary data analysis will be conducted in Edmonton
November 1991-January 1992	- a two hour meeting will be held with all community health nurses in the participating health units in order to discuss the findings and generate mechanisms for change
March 1992	- the Final Report will incorporate an analysis of the interviews and joint meetings and will be sent to all 27 health units, the Health Unit Association of Alberta, and Alberta Health.

ETHICAL CONSIDERATIONS

Anonymity will be maintained for all individuals and health units who participate in the study. All data will remain confidential.

ACTION REQUESTED

General comments or suggestions are solicited from chief executive officers, community health nursing administrators, and staff community health nurses in the 27 health units of Alberta. Although only a small number of health units can be included in this phase of the research, input from all health units is welcomed.

Additional letters of support in principle for this study would be appreciated for use with submissions to funding agencies whose deadlines are approaching.

Please send any correspondence to:

D. Lynn Skillen BScN MHSc OHNC (Associate Professor on study leave)
10222 146 Street
Edmonton Alberta
T5N 2Z9
Telephone: 454-1374 Messages: 492-5932 (Faculty of Nursing, University of Alberta)
Project Advisor: Dr. Graham S. Lowe (Professor of Sociology) 492-0487

THANK YOU FOR YOUR COOPERATION
DLS/December 4, 1990

APPENDIX B

INFORMED CONSENT FORM

Project Title:	Health Work Environments: The Challenge for Community Health Nurses in the 1990s
Researcher:	D. Lynn Skillen, BScN, MHSc, OHNC (Telephone: 454-1374)
Project Advisor:	Graham S. Lowe, PhD, Profession of Sociology (Telephone: 492-0487)

PURPOSE OF THE PROJECT:

This project will describe the work hazards of staff and managerial community health nurses (CHNs) in a sample of health units. It will identify intra- and extra-organizational factors that contribute to stressors and hazards and will generate mechanisms for reducing hazards to health and safety in the work environment.

CONSENT:

THIS IS TO CERTIFY THAT I, ______________________________, HEREBY consent voluntarily, without pressure or coercion, to participate in this research project which involves a sample of the health units in the Province of Alberta. I consent to complete a questionnaire and to be interviewed by the researcher during a total period of approximately one hour. I understand that the interview and questionnaire completion will be conducted in privacy. I give my permission for the interview to be tape recorded with the understanding that the tape recording will be destroyed by the researcher after it is transcribed, in order to prevent voice identification. I realize that the tape, transcription, and questionnaire will be coded with a number so that my identity is known only to the researcher. I further understand that the coded questionnaire and transcription will be retained in a locked cabinet by the researcher for a period of up to five years before being destroyed and that it may be subjected to a secondary analysis by the same researcher, following receipt of a second ethical clearance. While the results of the research may be published in scientific journals, and will be described in a final report, my name and that of my employer will be omitted. I realize that if data are presented as quotations, it will be done so that my identity is protected.

I have been given the opportunity to ask whatever questions I desire and questions, if any, have been answered to my satisfaction. I understand that I may withdraw from the study at any time and may refuse to respond to any questions without penalty.

I recognize that the benefits derived from this research will vary among the participants and the participating health units. I understand that the researcher will conduct a two hour meeting in each of the participating health units in order to present the preliminary analysis and to generate ideas for change. I further understand that a random sample of CHNs will be asked to redo the questionnaire.

Finally, I understand that all Local Health Authorities in the Province of Alberta will receive a copy of the final report in order to promote access to the study results.

______________________________	______________
(signature of research participant)	(date)
______________________________	______________
(witness to signature)	(date)

APPENDIX C

COMMUNITY HEALTH WORK HAZARDS QUESTIONNAIRE

D.Lynn Skillen
University of Alberta

PART A

Instructions: Please print.
Please check (✓) the appropriate answer or answers.

THE FIRST SET OF QUESTIONS IS ABOUT SAFETY ISSUES IN YOUR VARIED WORK ENVIRONMENTS

1. Which of the following personal protective equipment or materials do you use in your work environments? Please check (✓) all that apply.

( ) not applicable: GO TO QUESTION #2
( ) car seat belt
( ) glasses
( ) gloves
( ) gown
( ) lab coat
( ) mask
( ) mouthpiece for CPR
( ) plastic apron
( ) skin protective creams
( ) other: PLEASE SPECIFY ______________________

2. Are there written safety policies and procedures for your work as a community health nurse?

( ) Yes
( ) No
( ) Don't know

3. Is there a health and safety committee in your health unit?

( ) Yes
( ) No: GO TO QUESTION #5
( ) Don't know: GO TO QUESTION #5

4. How often does the health and safety committee meet?

( ) Don't know
( ) monthly
( ) at least every 3 months
( ) at least every 6 months
( ) at least once a year
( ) it has not met in the past 12 months

5. When do you use gloves in your work as a CHN?

( ) not applicable: GO TO QUESTION #6
( ) PLEASE SPECIFY:______________________

6. Have you had a work injury as a community health nurse?

( ) Yes: WHAT WAS THE NATURE OF YOUR INJURY?
____

( ) No: GO TO QUESTION #9

7. Did you complete a Workers' Compensation Board report form about your work injury?

( ) Yes
( ) No

8. During the past year, how many days did work-related injury keep you from work? (if NONE, enter 0)
_________ days

9. Do you consider any of the following problems to be a risk to your safety as a community health nurse? Please check (✓) all that apply.

( ) client verbal abuse
( ) client physical abuse
( ) clinics in unsupervised buildings
( ) clinics without access to a telephone
( ) urban car travel
( ) car travel on country roads
( ) dogs on clients' property
( ) inner-city district buildings and walkways
( ) inner-city district groups or individuals
( ) working in office after-hours
( ) none of the above
( ) other: PLEASE SPECIFY______________________________

10. Which of the following safety-oriented courses have you taken? Please check (✓) all that apply.

( ) no courses taken: GO TO QUESTION #13
( ) standard first aid
( ) advanced first aid
( ) defensive driving course
( ) basic CPR
( ) advanced CPR
( ) self-protection course

11. Are you a first aid instructor?

( ) Yes
( ) No

12. Are you a CPR instructor?

( ) Yes
( ) No

THE NEXT QUESTIONS ASK ABOUT BIOLOGICAL HAZARDS:

13. Which of the following are available to you at work? Please check (✓) all that apply.

( ) separate change area or locker room
( ) separate room for meals/breaks
( ) shower facilities
( ) none of the above

14. For which of the following diseases are you currently immune (naturally or by immunization)? Please check (✓) all that apply.

( ) diphtheria
( ) hepatitis B
( ) mumps
( ) polio
( ) rabies
( ) red measles
( ) rubella
( ) tetanus
( ) tuberculosis
( ) none of the above
( ) don't know

15. Do you handle any of the following in your work? Please check (✓) all that apply.

( ) dead animals or birds
( ) live animals or birds
( ) animal wastes
( ) human blood
( ) human emesis
( ) human faeces
( ) human sputum
( ) human urine
( ) vaccines
( ) none of the above

16. During the past year, which of the following communicable agents have you been exposed to at work? Please check (✓) all that apply.

( ) bacteria
( ) chlamydiae
( ) fungi
( ) parasites
( ) rickettsiae
( ) viruses
( ) none of the above
( ) don't know
( ) other: PLEASE SPECIFY________________________________

17. What procedures does your health unit follow for sterilizing contaminated equipment used in the community health nursing program? Please check (✓) all that apply.

( ) not applicable - only disposables used
( ) autoclave
( ) dry heat
( ) ethylene oxide
( ) disinfectant solution
( ) don't know
( ) other: PLEASE SPECIFY________________________________

18. Does your health unit have written policies and procedures for CHNs who experience a needle stick while working?

( ) Yes
( ) No
( ) Don't know

19. What procedures do you personally follow for handling a used needle? Please check (✓) all that apply.

( ) not applicable - do not give injections or draw blood:
GO TO QUESTION #20
( ) break needle
( ) remove needle from syringe
( ) do not re-sheath needle
( ) disposal in special container
( ) other: PLEASE SPECIFY________________________________

20. During the past year, have you had a needle stick as a CHN?

( ) Yes
( ) No

21. Prior to the past year, have you had a needle stick as a CHN?

( ) Yes
( ) No: GO TO QUESTION #23 IF NO NEEDLE STICK EVER AS A CHN

22. What procedure(s) did you follow when you had the needle stick? Please check (✓) all that apply.

( ) did nothing
( ) made it bleed
( ) washed hands
( ) disinfected the area
( ) reported it to immediate supervisor
( ) recorded it in the First Aid Book
( ) completed a WCB accident form
( ) cannot remember
( ) other: PLEASE SPECIFY________________________________

NOW SOME QUESTIONS ABOUT ERGONOMIC HAZARDS:

23. Does your work require you to use any uncomfortable positions and/or repetitive movements?

( ) Yes: PLEASE SPECIFY________________________________
( ) No

24. Does your work require you to carry heavy equipment or materials?

( ) Yes: PLEASE SPECIFY______________________________
( ) No

25. Is any of the equipment or furniture that you use at work uncomfortable or not adjustable to your needs? (e.g., handgrip, height, vision focal point)

( ) Yes: PLEASE SPECIFY_______________________________
( ) No

NEXT SOME QUESTIONS ABOUT PHYSICAL HAZARDS:

26. Think about the physical areas where you perform your work. Generally, how adequate are the following for you?

lighting	( ) adequate	( ) inadequate
ventilation	( ) adequate	( ) inadequate
air quality	( ) adequate	( ) inadequate
humidity	( ) adequate	( ) inadequate

27. Is there an air quality monitoring program in any office building where you work as a community health nurse?

( ) Yes
( ) No
( ) Don't know

28. Do you have sufficient space to carry out your work activities comfortably?

( ) Yes
( ) No

29. Does your work require use of any of the following?

video display terminal	( ) No ( ) Yes: Daily( ) Weekly( ) <Weekly( )
laser equipment	( ) No ( ) Yes: Daily( ) Weekly( ) <Weekly( )
microwaves	( ) No ( ) Yes: Daily( ) Weekly( ) <Weekly( )
photocopier	( ) No ( ) Yes: Daily( ) Weekly( ) <Weekly( )

30. Does your work involve exposure to any of the following?

vibration	☐ No	☐ Yes
excessive cold	☐ No	☐ Yes
grain dust	☐ No	☐ Yes
wood dust	☐ No	☐ Yes
excessive dust (any kind)	☐ No	☐ Yes
excessive heat	☐ No	☐ Yes
excessive noise	☐ No	☐ Yes
radiation	☐ No	☐ Yes

THE FOLLOWING QUESTIONS ASK ABOUT CHEMICAL HAZARDS:

31. Does your work involve exposure to any of the following? Please check (✓) all that apply.

☐ dusts (chemical)
☐ fumes (solid particles of a hot metal)
☐ mists (chemical)
☐ vapors
☐ liquid chemicals
☐ solid chemicals
☐ tobacco smoke
☐ none of the above
☐ don't know

32. Are you concerned that hazardous substances/agents could be carried home on your clothing?

☐ Yes
☐ No

33. Are there any substances at work that make you feel sick?

☐ Yes: PLEASE SPECIFY ______________________________
☐ No

34. Do any substances at work irritate your eyes, nose or throat?

☐ Yes: PLEASE SPECIFY ______________________________
☐ No

35. Do any substances at work give you a skin rash?

☐ Yes: PLEASE SPECIFY ______________________________
☐ No

36. Do exposures to substances at work ever cause you trouble with breathing? (e.g., cough, wheeze, shortness of breath?)

☐ Yes
☐ No

37. Does your work expose you to identifiable air pollution from industry?

( ) Yes: PLEASE SPECIFY________________________
( ) No

38. Does your work bring you into contact with any of the following substances? Please check (✓) all that apply.

( ) acids
( ) alcohols
( ) alkalies
( ) ammonia
( ) anaesthetic gases
( ) antineoplastic drugs
( ) arsenic
( ) asbestos
( ) bleach
( ) chloroform
( ) ethylene oxide
( ) formaldehyde
( ) halothane
( ) hexachlorophene
( ) phenol
( ) ketones
( ) lead
( ) mercury
( ) nickel
( ) PCBs
( ) pesticides
( ) solvents
( ) talc
( ) none of the above
( ) don't know
( ) other: PLEASE SPECIFY________________

NOW SOME QUESTIONS ABOUT PSYCHOSOCIAL HAZARDS:

39. How often do you feel under pressure at work? Please circle your answer.

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

40. Generally, how much of a problem is the pressure you experience at work? Please circle your answer.

No Problem				Very Great Problem
1	2	3	4	5

41. During the past year, has your work load increased?

( ) Yes
( ) No: GO TO QUESTION #43

42. What is the MAIN reason your workload has increased?

PLEASE SPECIFY:______________________________

43. Does your work interfere with your family/personal life?

( ) Yes
( ) No: GO TO QUESTION #46

44. If Yes, how serious a problem is this for you? Please circle your answer.

Not a Serious Problem				Very Serious Problem
1	2	3	4	5

45. Briefly describe how your work interferes with your family/personal life______________________________.

IN THE FOLLOWING QUESTIONS, 'STRESSOR' REFERS TO SOMETHING WHICH YOU PERCEIVE TO HAVE A NEGATIVE EFFECT

46. Are there any stressors for you in terms of the clients that you deal with in your work?

( ) Yes
( ) No: GO TO QUESTION #48

47. What is the MAJOR stressor for you in dealing with clients?

____

48. Are there any stressors for you in terms of the administrative aspects of your work?

( ) Yes
( ) No: GO TO QUESTION #50

49. What is the MAJOR stressor for you regarding administrative aspects?______________________________

50. Are there any stressors for you in terms of the clerical aspects of your work?

( ) Yes
( ) No: GO TO QUESTION #52

51. What is the MAJOR stressor for you regarding clerical aspects?____

52. Are there any stressors for you with respect to your relations with colleagues at work?

( ) Yes
( ) No: GO TO QUESTION #54

53. What is the MAJOR stressor for you regarding collegial relations? ____

54. Are there any stressors for you with respect to the Board of Health and your work?

( ) Yes
( ) No: GO TO QUESTION #56

55. What is the MAJOR stressor for you regarding the Board of Health?____

56. Are there any stressors for you in terms of the municipal government and your work?

( ) Yes
( ) No: GO TO QUESTION #58

57. What is the MAJOR stressor for you regarding the municipal government?____

58. Are there any stressors for you with respect to community agencies or community groups and your work?

( ) Yes
( ) No: GO TO QUESTION #60

59. What is the MAJOR stressor for you regarding community agencies/groups?____

60. Are there any stressors for you with respect to the provincial government and your work?

( ) Yes
( ) No: GO TO QUESTION #62

61. What is the MAJOR stressor for you regarding the provincial government?____

62. Are there any stressors for you with respect to a union and your work?

( ) Yes
( ) No: GO TO QUESTION #64

63. What is the MAJOR stressor for you in terms of the union?

____

64. What OTHER IMPORTANT stressors for you are there in your work? Please check (✓) all that apply.

( ) none: GO TO QUESTION #65
( ) relationship with community physicians
( ) potential for exposure to hepatitis B
( ) sexual harassment
( ) requirements for increased education
( ) nonflexible working hours
( ) work pace
( ) ethical dilemmas
( ) working in teams
( ) work overload
( ) medical emergencies
( ) being a generalist
( ) lack of autonomy
( ) potential for exposure to AIDS
( ) other: PLEASE SPECIFY__________________________

AND FINALLY, SOME QUESTIONS ABOUT REPRODUCTIVE HAZARDS:

The following are reproductive outcomes that have been associated with workplace exposures:

-congenital defect
-childhood cancer
-neonatal death (under 4 weeks)
-spontaneous abortion
-stillbirth

65. Do you believe that you have experienced any of the above outcomes as a result of your work as a CHN?

( ) Yes
( ) No
( ) Don't know

66. Are you concerned that you might experience any of the above as a result of your work as a CHN?

( ) Yes
( ) No

67. Have any of your CHN colleagues expressed concern about experiencing any of the above reproductive outcomes as a result of their work as CHNs?

( ) Yes
( ) No
( ) Don't know

68. Are any of your CHN colleagues concerned about infertility because of their work hazards?

( ) Yes
( ) No
( ) Don't Know

69. Are you concerned about infertility because of your work hazards?

( ) Yes: PLEASE SPECIFY ______________________
( ) No

70. Knowing your work, are there any hazards that would make you choose not to breast feed an infant or young child while employed as a CHN?

( ) Yes: PLEASE SPECIFY: ______________________
( ) No

71. Do you consider yourself at risk for problems with your sex drive because of your work hazards as a CHN?

( ) Yes
( ) No

72. If female, do you consider yourself at risk for problems with your menstrual cycle because of your work hazards as a CHN?

( ) Yes
( ) No

73. Are there any potential reproductive hazards that you consider to be related to the work that you and your colleagues do which have not been covered in Questions #65-72?

( ) Yes: PLEASE SPECIFY: ______________________
( ) No

THANK YOU

WE WILL NOW BEGIN OUR INTERVIEW.

PART B

WE WILL FINISH WITH SOME GENERAL QUESTIONS ABOUT YOU.

Please check (✓) the answer that is appropriate for you.

74. What is your current employment status in the Health Unit?

( ) Regular full-time (30 hours or more per week)
( ) Regular part-time (less than 30 hours per week)
( ) Job-sharing
( ) Other: PLEASE SPECIFY:___________________________

75. What is your current position?

( ) staff community health nurse
( ) specialist at staff level: PLEASE SPECIFY: __________
( ) assistant supervisor
( ) supervisor
( ) assistant/associate manager or director
( ) manager/director
( ) other: PLEASE SPECIFY: ___________________________

76. What is the highest level of education that you have completed?

( ) RN diploma
( ) Post-RN diploma in public health
( ) Post-RN diploma in specialty other than public health:
( ) Baccalaureate degree in nursing
( ) Baccalaureate degree in discipline other than nursing:
( ) Master's degree in nursing
( ) Master's degree in discipline other than nursing:
( ) Other: PLEASE SPECIFY:___________________________

77. Are you currently enrolled in an educational program?

( ) Yes: PLEASE SPECIFY:___________________________
( ) No

78. What education have you obtained in OCCUPATIONAL health?
Please check (✓) all that apply.

( ) no occupational health education: GO TO QUESTION #79
( ) non-credit workshop(s)
( ) non-credit course(s)
( ) health unit inservice program(s)
( ) credit course(s)
( ) occupational health nursing certificate
( ) occupational health and safety certificate
( ) other: PLEASE SPECIFY:___________________________

79. How many years of experience as a community health nurse do you have?

______ years

80. How long have you worked as a community health nurse in THIS Local Health Authority?

______ years

81. On average, how many hours of official/approved overtime do you work per month? (if NONE, enter 0 and GO TO QUESTION #83)

_________ hours

82. Are you compensated for official/approved overtime hours in time or money?

( ) Yes
( ) No

83. On average, how many hours of unofficial/unapproved overtime do you work per month? (if NONE, enter 0 and GO TO QUESTION #84)

________hours

84. How do you describe the area in which you do the MAJORITY of your community health nursing?

( ) urban
( ) rural
( ) urban and rural mix

85. To whom do you report directly?

( ) assistant supervisor
( ) supervisor
( ) assistant/associate manager or director
( ) manager/director
( ) medical officer of health (MOH)
( ) chief executive officer (CEO)
( ) combined MOH and CEO position
( ) other: PLEASE SPECIFY:_________________________________

86. Do you require clerical assistance with your work?

( ) Yes
( ) No: GO TO QUESTION #89

87. How many staff are available to assist you with your clerical work? (if NONE, enter 0)

____

88. Is the clerical assistance adequate for your work requirements as a CHN?

( ) Yes
( ) No

89. Are you a member of a union (collective bargaining unit under the Labour Act)?

( ) Yes
( ) No: GO TO QUESTION #91
( ) Don't know: GO TO QUESTION #91

90. Which of the following is your collective bargaining unit?

( ) UNA group agreement
( ) UNA local agreement
( ) Staff Nurses Association of Alberta
( ) Other: PLEASE SPECIFY:________________________________

91. Which sex are you?

( ) Female
( ) Male

92. Do you live alone?

( ) Yes
( ) No

93. What is your marital status?

( ) Single
( ) Married/Common-law
( ) Separated
( ) Divorced
( ) Widowed

94. Are you sole breadwinner for the household?

( ) Yes
( ) No

95. How many children are living with you by age?

( ) None: GO TO QUESTION #96

0 - 5 years #__________
6 - 10 years #__________
11 - 15 years #__________
16 - 20 years #__________
21 or more years #__________

96. What is your age? ______years

97. What is your approximate ANNUAL income from community health nursing before deductions?

( ) less than $10,000
( ) $10,000 - $19,999
( ) $20,000 - $29,999
( ) $30,000 - $39,999
( ) $40,000 - $49,999
( ) $50,000 - $59,999
( ) $60,000 or more

THANK YOU VERY MUCH FOR YOUR COOPERATION

APPENDIX D

Pretest Review Form - Academic Reviewer

Title of Research: Work Hazards of Community Health Practitioners: An Organizational Perspective

Researcher: D. Lynn Skillen

RESEARCH QUESTION TO BE ANSWERED BY QUESTIONNAIRE
What are the biological, chemical, ergonomic, physical, and psychosocial hazards that community health nurses perceive in their work environment?

RESEARCH QUESTION TO BE ANSWERED BY INTERVIEW
What organizational characteristics are associated by community health nurses with their perceived hazards?

QUESTIONS FOR ACADEMIC REVIEWER
Questionnaire Part A and Part B

PLEASE STAR (*) QUESTIONS WITH PROBLEMS AND WRITE IN MARGINS

1. Are the questions clear and unambiguous?
2. Are there any offensive or emotionally laden questions?
3. Is the vocabulary appropriate?
4. Are there double meanings or multiple issues embedded in any one question?
5. Will the use of PLEASE SPECIFY be a deterrent to acquiescent response sets?
6. Any suggested wording changes?
7. Any further comments?

Interview Guide

1. Is the language appropriate?
2. Are any questions threatening?
3. Are any questions unclear or ambiguous?
4. Could these questions stimulate responses related to power structures and relations?
5. Could these questions motivate the respondent to participate actively in the interview?
6. Are these questions likely to direct the interview to hazards and stressors and not the health status or stress levels of the respondent?
7. Do you think the sequencing of these questions makes a difference regarding the possibility of a socially desirable response bias?
8. Any suggested wording changes?
9. Any further comments?

THANK YOU FOR YOUR ASSISTANCE.

APPENDIX E

Pretest Review Form - Community Health Nurse Reviewer

Title of Research: Healthy Work Environments: The Challenge for Community Health Nurses in the 1990s

Researcher: D. Lynn Skillen

Questionnaire Part A and Part B

PLEASE STAR (*) QUESTIONS WITH PROBLEMS AND WRITE IN MARGINS

1. Are the questions clear and unambiguous?
2. Are there any offensive or emotionally laden questions?
3. Is the vocabulary appropriate?
4. Are there double meanings or multiple issues embedded in any one question?
5. Any suggested wording changes?
6. Any further comments?

TIME TAKEN TO COMPLETE THE QUESTIONNAIRE _______________ minutes

THANK YOU FOR YOUR ASSISTANCE

APPENDIX F

Questionnaire Reliability Testing

After respondents had completed the questionnaire, reliability was evaluated using measures of stability (Bohrnstedt, 1983; Brink & Wood, 1988). Immediately following instrument completion, I conducted a taped interview with the respondent, using an interview guide that referred to some topics covered in the questionnaire. One month later, the Community Health Work Hazards Repeat Questionnaire was constructed and a retest strategy was exercised. This measure across time was used to assess the consistency of participants' responses (Maguire & Hazlett, 1969; Mishel, 1989). Given the stability of community health practice under the Public Health Act (1984), it was assumed that the factors being measured would remain constant during an interval of four weeks. As well as avoiding true change over time on underlying, unobserved variables (Bohrnstedt, 1983), the four week interval was expected to minimize subjects' recall of their responses.

In the reconstructed questionnaire, all open-ended response options and questions were deleted except those that requested numbers, leaving 79% of the original questions. The resultant 77 forced-choice items expedited prompt completion of the questionnaire and avoided subsequent demands on researcher coding time.

Two respondent names were randomly selected from each of the five organizations. Four weeks to the date after data had been collected in each health unit, the repeat questionnaires with covering letters and self-addressed, stamped envelopes were mailed out. Each respondent was asked to complete and date the questionnaire by a deadline which was six weeks following data collection. Nine out of the 10 subjects complied with the request; the tenth did not return the questionnaire and was not reminded because the arbitrary deadline had been passed. Hence, 16% of the study sample constituted the reliability check.

A *t* test was conducted on the means at Time 1 and Time 2. The *t* distribution was applied to a total of 218 paired observations for the test-retest responses of the nine CHNs. Each subject in the sample of nine actually acted as her own control. Out of 218 sets of observations, only three were statistically significant. The *t* values and two-tailed probabilities were -2.53 (p=0.035), -2.83 (p=0.030), and again -2.53 (p=0.035). The negative *t* values indicate that the means were larger at Time 2. For every subject, there was an interview between Time 1 and Time 2 which may have increased awareness to the extent that means became significantly larger. Because only three were statistically significant, the first impression was that there was no convincing evidence that subjects answered differently on the retest. However, there could have been important differences between the means that were undetected because the sample size was too small. Although the nine CHNs were randomly selected, this was only tentative and preliminary evidence that the Community Health Work Hazards Questionnaire was reliable.

APPENDIX G

Initial Interview Questions - Day One

Now that you have completed Part A of the questionnaire, were there any work hazards or stressors that were not included?

Tell me about a major work stressor for you during this past year.
Probes: What were you able to do about it? What factors have a bearing on the stressor? What did you try to do?

What decisions have affected your exposure to hazards? Why do you think you are exposed to these hazards?

How do you go about dealing with a work hazard?
Probes: How would your colleagues deal with work hazards? Why do you think you are exposed to the hazards?
What obstacles have you encountered when trying to deal with your work hazards? What supports?
What are the factors outside the organization that influence your having work hazards?

What mechanisms exist in the health unit to deal with work hazards?

What role does your staff nurses' association or collective bargaining unit take with respect to your hazards?

What access do you have to occupational health services?
Tell me what you think are the strengths and weaknesses of the health unit organization for dealing with your hazards.

To what extent are you able to talk about your work hazards with colleagues? With administration? With institutions beyond the organization? How are your concerns dealt with?

What kinds of things do you do in your community health nursing practice to deal with occupational hazards?

What occurs if you disagree with those in authority about your work hazards and stressors?

What do you consider to be your rights with respect to hazardous exposures at work? How have you learned about those?

General Probes: Could you tell me more about that?
What made you notice that?
How come?
How long have you noticed that?
And since then?

APPENDIX H

Initial Interview Questions for Managerial CHNs - Day Fourteen

* Now that you have completed Part A of the questionnaire, were there any work hazards or stressors that were not included?

How concerned are you about your work hazards or stressors as a managerial CHN?

What exposure have you had to WHMIS?

* What access do you have to occupational health services for yourself?

How much influence or control do you have over your work hazards or stressors?

* What kinds of things do you do as a managerial CHN to deal with your occupational hazards?

Who has the authority to deal with your work hazards or stressors?

* Who do you talk to about your work hazards or stressors?

* Within the management group, how much do you discuss work hazards or stressors?

* What are the strengths of the health unit organization for dealing with your occupational hazards and stressors? The weaknesses?

What influence does the Board have on your work hazards or stressors? What is the Board like? How political is it?

What role does isolation (uncertainty, humour) play?

How does being in management in a female-dominated profession have a bearing on your work hazards or stressors?

Of all the programs in the health unit, which ones have the most influence over their work hazards or stressors?

How does the physical separation of several district offices affect your work hazards or stressors?

How might ownership versus leasing of buildings have an effect on your work hazards or stressors?

* What decisions or policies outside of the organization have had an effect on your occupational hazards?

* What decisions or policies within the organization?

How political do you have to be in the managerial CHN position with respect to your work hazards or stressors?

What is impossible to do now in your health unit regarding your work hazards or stressors, but if you could, would dramatically change everything?

APPENDIX I

Initial Interview Questions for Staff CHNs - Day Fourteen

* Now that you have completed Part A of the questionnaire, were there any work hazards or stressors that were not included?

How concerned are you about your work hazards or stressors as a CHN?

Tell me about a major work stressor for you during this past year.

* What mechanisms exist in the health unit to deal with your work hazards or stressors?

* Who do you talk to about your work hazards or stressors?

* What role does not having a collective bargaining unit take with respect to your workplace health and safety?

What exposure have you had to WHMIS in the health unit?

* What access do you have to occupational health services as a CHN?

* What are the strengths of the health unit for dealing with your hazards or stressors as a CHN? What are the weaknesses?

Of all the programs in the health unit, which one has the most influence or control over its work hazards or stressors?

What is communication like between programs in terms of work hazards and stressors?

What is the Board like? How much of a medical background do the members have?

Who has the authority to deal with your work hazards and stressors?

* What occurs if you disagree with those in authority about your hazards and stressors?

How political do you have to be as a CHN to deal with your hazards and stressors?

* What kinds of things do you do in your practice as a CHN to reduce your work hazards or stressors?

What are your rights as a CHN with respect to workplace health and safety? What is your responsibility?

What role does uncertainty (isolation, being in district office, humour) play with respect to your work hazards or stressors?

* What decisions or policies within the organization influence your exposure to hazards or stressors?

What is impossible to do in your health unit right now about your work hazards or stressors, but if you could, would dramatically change everything?

APPENDIX J

March 18, 1991

Review of interview tape: L. Skillen

1. "Can you think about a major work stressor for you this past year?"

As Grace Sills says, watch questions beginning with 'can' when you know the individual is capable of responding. Hence, I would rephrase the question to something like "I would like you to tell me about..."

2. "Have community health nurses tried to do anything to address...?"

This is a closed question and potentially limits a response so open it up to something like "how have CH nurses tried to address...?" After you ask a question refrain from answering it; always wait for the S to respond.

3. Good use of clarifying technique: restating your understanding.

4. "What kinds of decisions...?"
An example of a good open question which offers the S full opportunity to respond. Try to plan your question to avoid confusion when presenting it. Your S may have had trouble responding because she was sorting out what it was you were asking.

5. "What routes of action...?"
"What about you...?"
"How...?"
These are all examples of good open questions which elicit information.

6. "Do you have experience...?"
Change to a what question and you'll get more response.

7. "Who has the authority...?"
A well phrased question which avoids a yes/no kind of response.

8. Good validating technique.

9. "What access do you have to...?"
Again, a nice open question.

10. "Would you think about what are the strengths of your organization for dealing with work hazards as well as what the weaknesses are?"

There is too much for the S to respond to in this multiple question. Break the question into two:

a) What do you think are the strengths of your organization for dealing with work hazards?

b) Weaknesses?

11. "How much power do you as managers have...?" You then offer an example. Then "How would you deal with it?" All good questions but go at it a little more slowly and ask one question at a time giving her full opportunity to respond.

12. "Try to imagine..." This is a good interviewing technique which often produces interesting information.

13. "To what extent are you able to talk about w. h. with your colleagues?"
Another example of good questioning technique. Also the 'what about' questions are good.

14. "Are there policies...?" You might want to rephrase such a question to "What policies and guidelines exist for dealing with HIV...?"

15. "I'd like to know what you think your rights are...?" Again, a well phrased question.

SUMMARY

1. Good use of open questions which allow the S to respond from her frame of reference which is what you are striving to achieve.

2. Lots of general leads (yes, umum, allright) which offer encouragement for the S to continue.

3. Good use of clarification techniques (restating, do you mean) which indicates to the S your understanding and interpretation of what she has said and which generally offers the S an opportunity to validate.

4. Take time to phrase your question as clearly as possible; ask one question at a time; give your S time to respond (often silence means the S is reflecting on the question and the response to it); refrain from providing answers/comments to your own questions.

Good work, Lynn. As I listened to the last part of the tape, it just struck me that probably one of the greatest health hazards in the work place is difficult/stressful interpersonal relationships! What do you think??

RN, PhD

APPENDIX K

Code Words Developed During Substantive Coding*

1. stressor
2. stressor outcome
3. inequity
4. coverage
5. upward communication
6. downward communication
7. interdepartmental communication
8. physical location
9. knowledge
10. infogap
11. vertical power
12. belief
13. confidentiality
14. horizontal communication
15. written communication
16. verbal communication
17. CHN practice
18. extraorganizational communication
19. management professional communication
20. organizational environment
21. humour
22. selfcare strategy
23. collegial support
24. self blame
25. horizontal power
26. nonconcern
27. professional autonomy
28. organizational dependency
29. departmental dependency
30. WHMIS
31. isolation
32. union communication
33. specialization
34. management succession
35. political activity
36. standards
37. policy
38. time
39. representation
40. size
41. numbers
42. history
43. personnel configuration
44. strategy
45. conflict
46. management control
47. resource allocation
48. substitutability
49. management practice
50. inaction
51. organizational autonomy
52. ownership
53. innovation
54. guardedness

* Codes are listed in the order in which they were developed.

APPENDIX L

University of Alberta
Edmonton

Canada T6G 2H4

Department of Sociology
Faculty of Arts

5-21 HM Tory Building, Telephone (403) 492-5234

TO: D.Lynn Skillen

DATE: 29/1/91

FROM: R. Sydie
Chair, Sociology Department
Ethics Review Committee
4-27 Tory Building

RE: Ethics Review of

Project Title: Healthy Work Environments

Applicant: D. Lynn Skillen

A Faculty of Arts review committee has completed its review of the above noted research proposal and I am pleased to report that the committee has found this proposal acceptable on ethical grounds.

Sincerely,

RA Sydie

R. Sydie

APPENDIX M

TRANSCRIBER CODE OF CONFIDENTIALITY

Project Title:	Healthy Work Environments: The Challenge for Community Health Nurses in the 1990s
Researcher:	D. Lynn Skillen, BScN, MHSc, OHNC (Telephone: 454-1374)
Project Advisor:	Graham S. Lowe, PhD, Professor of Sociology (Telephone: 492-0487)

PURPOSE OF THE PROJECT:

This project will describe the work hazards of staff and managerial community health nurses (CHNs) in a sample of health units. It will identify intra- and extra-organizational factors that contribute to stressors and hazards and will generate mechanisms for reducing hazards to health and safety in the work environment.

CONSENT:

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